Chapter 3

PLOTTING THE CAMPAIGN

Even for Master Sergeant Joseph Lloyd, a Special Forces soldier used to such things, the meeting was very strange indeed. Lloyd, who commanded Special Forces team 595, had been bouncing around the Saudi desert in search of the Kuwaiti 35th Armored Brigade for more than six hours. He knew the brigade was camped somewhere near Hafar al-Batin about 50 miles from the Kuwaiti border. Lloyd doggedly sought out his charge, Colonel Salam al-Masoud, a figure whose reputation among the Kuwaitis had already begun to escalate from respect to veneration. By late afternoon, Lloyd found the cluster of eight white Bedouin tents that formed Salam's encampment. When Salam emerged, Lloyd was struck that the soldier he sought was a huge, muscular, black man. Accustomed to such reaction, Salam extended his massive hand and greeted Lloyd with an unassuming grace that belied his reputation as an exceptional warrior. The Sandhurst graduate had served with the 35th Brigade his entire career, earning his reputation in combat at a key intersection northeast of Kuwait City near the town of al-Jahra. Unlike most of the Kuwaiti army, the brigade had tried to withstand the onslaught of the advancing Iraqi armored columns until faced with encirclement. At that point, Salam had reluctantly withdrawn what remained of the brigade across the Saudi border.

During the first few months of Desert Shield, the Saudi command had gradually moved the 35th farther back from the border, fearing that the Kuwaitis might react recklessly to the news of atrocities in their homeland. Further retreat had done nothing for Kuwaiti morale. Salam hoped that the Americans' presence would convince his disheartened soldiers that they would soon have the opportunity to take back their lost country.

As he approached the 35th Brigade command post with Salam, Lloyd noticed the homemade Shaheed Brigade pennant flying outside the tent that served as the brigade's tactical operations center. Inside, colorful

carpets covered the ground, and furniture, as usual, was conspicuously absent. Sitting on the carpeted floor, Salam offered Lloyd sweet, hot tea and introduced his operations officer, Major Suleiman, a graduate of the Jordanian Staff College. Suleiman, in turn, introduced the brigade's battalion commanders. Lieutenant Colonel Hamid, a nervously aggressive officer who at one time had run the Kuwaiti armor school, commanded the newly formed 2d Mechanized Battalion. Lieutenant Colonel Ahmed from the 7th Armored Battalion was a graduate of the armor advanced course at Fort Knox. His battalion had carried the lion's share of the fighting the previous August. Lieutenant Colonel Ali was a colorful, yet reflective and quiet national soccer hero who commanded the 8th Armored Battalion. Also a US armor advanced course graduate, Ali spoke fluent English.

Lloyd explained to the Kuwaitis that his team would live with them and assist them with training. When Salam took the floor, he offered his gratitude to both his Arab brothers and the Americans for their help. But in a solemn tone he emphasized that his army would lead any attack back into Kuwait and that Kuwaiti blood, preferably that of an officer, would be the first blood spilled in any ground war. Lloyd was pleased with his reception. The Kuwaitis seemed far more proficient in military operations than the other units he had advised during his 17 years in Special Forces.

Lloyd's detachment joined the 35th Brigade at the end of October. In the following three months, his teams trained the Kuwaitis on mine-clearing, Iraqi defensive tactics, aircraft and armored vehicle identification, and tank-killing techniques. At the same time, the Americans learned a great deal from the Kuwaitis about the nature of their mutual enemy. Satellites might count Iraqi tanks with great precision, but Salam's officers provided a perspective on personalities and tactical techniques, both good and bad, that they had observed from years of professional elbow rubbing with their neighbors to the north. These insights, passed assiduously by Lloyd up the chain to CENTCOM, formed an essential chapter to a very small book of knowledge concerning the personality and fighting ability of the Iraqis.

Lloyd, undeterred by his very limited Arabic, spent almost every evening after dinner with Salam discussing the day's training and upcoming plans. Lloyd's respect for his giant companion increased in proportion to the rapport that grew between them. Several times Salam invited Lloyd to be his guest at supper. Although by then no stranger to Arab cuisine, Lloyd still blanched a little when offered the "delicacies"

of the meal: the tongue and less identifiable organs of a grilled goat. Despite his macho Special Forces "snake-eater" image, Lloyd had his limits. He became adept at surreptitiously tucking the offensive portions back into his pile of rice.

The ultimate test of Lloyd's effectiveness came in December when the 35th Brigade received new Yugoslavian M-84 main battle tanks, derivatives of the T-72 tanks used by the Soviets. Concerned about secrecy, the Yugoslavian training team that accompanied the tanks wanted the Americans kept away from them. To his credit, Salam refused, a gesture that demonstrated just how much he had accepted Lloyd and his team. Ironically, Salam, the tanker, put his trust in Lloyd, the light infantryman, to teach his men how to operate and maintain the M-84s. Lloyd knew little about tanks, but he did know how to train and he was not about to violate the Kuwaitis' trust by saying no. Late every night, Lloyd and his team studied manuals about Soviet tanks. During the day, the Special Forces soldiers instructed their charges with the self-assurance and skill learned from many years of similar experiences with other armies in Africa, South America, and Asia.

Tension mounted considerably in the 35th Brigade as the air war started. Salam, distressed at not having orders, worried that the Saudis

The close relationship between Special Forces soldiers and their Arab counterparts helped hold the Coalition together.

might attack without him. Only 10 days before the ground war began, the 35th received its mission from the Muthannah Task Force.[1] Salam's brigade would spearhead the entire Joint Forces Command-North's attack and lead the force into Kuwait City. The brigade was going home and Lloyd and his team were going with them.

Just how much Lloyd's team and teams like his affected the fighting proficiency of those they advised is difficult to measure. Perhaps their most important contribution was simply that they symbolized America's commitment to restoring Kuwait's freedom. Lloyd's team helped shore up the 35th Brigade's flagging morale and in the process became part of the glue that held the Coalition together as part of the overall CENTCOM effort.

TRANSITION TO THE OFFENSE

The challenges that faced Master Sergeant Lloyd in October also faced leaders throughout the US Army in the early uncertain months of Desert Shield. While the hurried buildup of forces continued through August and September 1990, the US and its Coalition partners sought a strategy to confront Iraqi intransigence and Saddam Hussein's outrageous behavior. By late September the Coalition high command was resigned to the fact that economic sanctions and the deployment of a single American corps were not sufficient to drive Saddam out of Kuwait. They resolved to look seriously at offensive options.

Based on political guidance issued by Washington, the Desert Storm Campaign plan that General Schwarzkopf crafted consisted of four phases, which had been roughed out conceptually by September. The first three were reserved primarily for Coalition air operations. The Coalition would strike strategic targets first, then assure air supremacy by crippling the Iraqi air defenses. The air forces would then prepare the battlefield by striking tactical targets on the ground. The fourth phase would be a ground offensive. The first three phases were initially developed by Air Force planners in Washington and the fourth by Army planners under Schwarzkopf's personal supervision at CENTCOM headquarters in Riyadh. Planning began in late September and continued without interruption until the ground war commenced in February. Schwarzkopf, given the score by Washington, composed the symphony he would eventually conduct. How he set the notes to paper is the subject of this chapter.

AIRLAND BATTLE FORMS THE CAMPAIGN GAME PLAN

History all too often reinforces the familiar maxim that armies tend to fight the next war as they did the last. However, the Gulf War proved to be a dramatic exception. AirLand Battle, the war-fighting doctrine

applied by the American Army in Desert Storm, not only survived the initial clash of arms but, in fact, continues as a viable foundation for the development of future war-fighting doctrine. The durability of the Air-Land Battle concept is owed to three factors. First, unlike past instructions for the conduct of war, the 1986 version of AirLand Battle was a vision of what was possible rather than an owner's manual for the equipment and force structures available at the time. In fact, if the 1986 edition of FM 100-5 possessed a fault, it was that some concepts were so far ahead of capabilities that many balked at their full implementation with the tools then at hand. Second, the conditions of combat and the dynamics of the Desert Storm battlefield proved to be modeled with remarkable fidelity to FM 100-5. Third, and perhaps most notable, is that AirLand Battle represented a way of thinking about war and a mental conditioning rather than a rigid set of rules and lists of things to be done in lock-step fashion. Its four tenets, *initiative, agility, depth,* and *synchronization,* are timeless, immutable precepts for present and future wars.

Initiative implies offensive spirit, boldness, audacity, and the propensity to take risks in the heat of battle. In the attack, it means never allowing the enemy to recover from the shock of initial contact. To exploit initiative, a plan must emphasize speed and the ability to shift the main effort quickly. The goal is to create a situation so fluid that the enemy loses track of events and becomes psychologically detached to the point of incoherence.

Agility is reacting, both physically and mentally, more quickly to change than the enemy. Rapid adjustment must be built into plans and training in order that they not be uncoordinated reactions to the enemy's initiative. Battle drills and playbooks enhance agility at the tactical level, and contingency plans at all levels enable the coordinated shifting of forces or fires with minimum delay. Both leaders and units must be agile enough to overcome the routine frictions and confusion of battle. To overcome friction, leaders must continuously "read the battlefield," decide quickly, and act without hesitation.

In Desert Storm, *depth* was the tenet in which the concept was clearly ahead of the capabilities. Depth requires accurate intelligence, means of attack, and the momentum of around-the-clock operations that extend space and time deep into an enemy's rear. By attacking the enemy throughout the depth of his dispositions, commanders rob him of his freedom to act with flexibility. To achieve this capability, commanders must see current and projected enemy dispositions and then attack them with Air Force, Navy, and Army air power, long-range fires, and Special Forces action. By the time of Desert Storm the Army had long-range attack means only in the newly deployed Army Tactical Missile System (ATACMS) and attack helicopters. It would still rely heavily on Coalition air forces to achieve true depth for both intelligence collection and attack.

Conceptually, *synchronization* is similar to blending the different instruments of an orchestra to produce the desired harmony and timing of a musical piece. Commanders, like musical directors, must trust the various sections to play their parts without direction according to the musical score. Like directors, commanders serve to set the tempo and vary the emphasis of the various instrumental sections. As an orchestra needs a good score, an army must have detailed plans that all units can understand and execute with minimal direction. The product—synchronization—is a maximum economy of force, with every resource used where and when it will make the greatest contribution to success so that nothing is wasted or overlooked.

Doctrine only works if a quorum masters it. The Army was fortunate to be given two decades to grow a generation of leaders taught, trained, and selected based on this new way of thinking about war. The Army was equally fortunate to be given time by Saddam to create from the tenets of AirLand Battle a plan for a sweeping end-around maneuver that soldiers would nickname "the Great Wheel." Taking on an enemy perceived to be significantly superior in numbers and ruthless in the use of chemical weapons could only be approached with care. Offensive options in August and September were limited. In September Schwarzkopf believed that 8 to 12 months would be needed to assemble forces necessary for a credible offense. In those uncertain days, Schwarzkopf's planners were more concerned with obtaining a foothold and surviving than with offensive action. [2]

FORMING THE PLANNING TEAM

In first-rate armies, planning for war is continuous. The march to war is too rapid for a commander to begin his own planning only after receiving a plan from above. Even if his plan later proves to be off the mark, the process of deriving a plan has its own intrinsic merit. Just as physical exercise fosters agility and strength, aggressive planning hones the mental abilities and agility essential to deal with the intellectual stresses of war. Parallel planning is the process of several interrelated planning efforts running concurrently without one depending entirely on another. In August and September, offensive objectives were only faint concepts of a ground war that no one at the time wanted to fight. Schwarzkopf's job was to mold the planning effort to produce the score for the symphony that would become the Desert Storm campaign plan.

The role of military planners at all levels, regardless of the operation, is to reduce risk and guesswork and to devise a simple scheme that can be clearly understood and violently and relentlessly executed by all levels of command. Though a good plan reduces luck to a science, imaginative planners capable of transforming luck to certainty are difficult to assemble even in the best of armies.

Almost a half-century before Desert Storm, General George C. Marshall said:

> *Warfare today is a thing of swift movement—of rapid concentration. It requires the building up of enormous firepower against successive objectives with breathtaking speed. It is not a game for the unimaginative plodder.*[3]

Marshall's words lost nothing of their import in the years separating the two wars. Schwarzkopf's commitment to find exactly the right balance of human chemistry to coalesce his vision of the pending campaign into a realistic, achievable plan was derived from this realization. To be sure, CENTCOM possessed its share of officers who were anything but "plodders," but very early in Desert Shield, CENTCOM and ARCENT staffs were very thin and just able to keep up with the immediate practical problems of moving soldiers and equipment into the theater. They had little opportunity to shift from the practical present to the theoretical future. In any event, day-to-day operators tend to flex a set of intellectual muscles different than those suited to future planning. General Vuono, recognizing the need in Saudi Arabia for a more conceptually grounded group of planners able to separate themselves from day-to-day operations, offered up a group of SAMS graduates for that purpose. Schwarzkopf readily accepted the offer.[4] He intended to use the group principally to focus on the planning process and to ensure secrecy at a time when leaks might inadvertently induce a preemptive Iraqi move or disrupt the fragile Coalition.[5] He would focus this new body entirely on the fourth phase of the campaign, the ground offensive.

This special planning group would achieve considerable notoriety after the war. Lieutenant Colonel Joe Purvis, the senior member, came from the Joint Staff of Pacific Command in Hawaii. Major Greg Eckert arrived from the 4th Infantry Division at Fort Carson, Colorado, where he had been the division's training officer. Major Dan Roh had been the executive officer of the 708th Main Support Battalion, 8th Infantry Division, in Germany, and Major Bill Pennypacker, the executive officer of the 1st Brigade, 1st Infantry Division, at Fort Riley, Kansas. The four officers arrived at CENTCOM headquarters in Riyadh between September 16 and 18, 1990.[6] Purvis later asked for Navy Petty Officer First Class Michael Archer from the CENTCOM staff to serve as an administrative and security assistant. Archer was bright and articulate, and his specialty in intelligence could be used to the group's advantage.[7] Other specialists would join the group periodically to lend expertise in other areas.

Although the Purvis group forms the nexus of the story of Desert Storm planning, it was, in reality, only one layer of a larger parallel effort comprising all levels of command. Nevertheless, a careful recounting of the group's role demonstrates how the course of the campaign evolved.

The "Bear" with three of his planners after Desert Storm. Left to right: Lieutenant Colonel Greg Eckert, Major Dan Roh, and Colonel Joe Purvis. Lieutenant Colonel Bill Pennypacker is missing from the photo.

Military planning in the American Army is not the exclusive purview of SAMS, the Command and General Staff College, or any other single institution. The Army has traditionally prided itself on its ability to "grow" officers in the school of experience as much as in formal courses. The Purvis group represents a larger body of officers imbued with equal skills and experiences. Certainly others could have done as well, but Purvis and his three majors were the ones who were on the hot seat in September 1990.

GUIDANCE, PROCESS, AND ANALYSIS

The planning group worked directly for General Schwarzkopf and soon became his sounding board and intellectual alter ego. Very tight security measures, as well as Schwarzkopf's personality, fostered this unique relationship. In addition to the five members, Schwarzkopf would initially allow no more than five additional key people access to the group's efforts: himself and his aide-de-camp; his chief of staff, Marine Major General Robert Johnston; Rear Admiral Grant Sharp, the operations and plans officer; and Colonel John Buckley, the chief of the CENTCOM plans division.[8] The group faced a demanding taskmaster in a pressure-cooker environment. On September 18, Schwarzkopf presented his initial

guidance for the offensive plan: "Assume a ground attack will follow an air campaign... study the enemy dispositions and the terrain and tell me the best way to drive Iraq out of Kuwait given the forces we have available."[9] From the beginning, everyone understood that a frontal assault into the teeth of the Iraqi defenses was to be avoided at all costs.

Purvis' first challenge was to develop a plan for the planning process itself. He directed his group to collect specific background information on subjects that each member knew well. Pennypacker took enemy, Eckert, friendly forces; Roh would analyze logistics on both sides. Although the demand for secrecy made data collection difficult, the common network and shared cultural bias that existed among the SAMS graduates in the theater provided a remarkably effective shadow network for exchanging information and discussing concepts. The group came to rely heavily on this essential peer exchange that continued to expand throughout the planning phase.

The group spent nearly a week gathering data for their analysis, applying the factors of METT-T that each had learned and practiced since they had been lieutenants. *Mission, enemy, terrain and weather, troops and transport available, and time,* with some occasionally more sophisticated extrapolation, provided virtually every category of data necessary to formulate a plan.

Mission

Purvis assumed the task of refining a mission statement by analyzing the explicit planning imperatives as well as those implied by the situation. He began with the President's stated objectives: unconditional withdrawal of Iraqi forces from Kuwait, restoration of Kuwait's sovereignty, destruction of Iraqi capability to produce and employ weapons of mass destruction, and destruction of Iraq's offensive capability. Some longer-ranging political objectives implied at the time were to restore regional stability, to hold the Iraqi government accountable for war crimes, to restore Free World access to Middle East energy sources, and to strengthen cooperation between the US and Arab states in the region.[10]

The military aspects of Schwarzkopf's mission were clear. To liberate Kuwait, CENTCOM would have to attack dug-in Iraqi forces in the Kuwaiti theater of operations with air and ground forces. Some believed a ground offensive could be shortened or made unnecessary with aggressive air operations. An intensive air attack combined with psychological warfare and the pinch of international sanctions might erode Iraqi support for the war enough to convince Saddam to withdraw his forces from Kuwait. The concept appealed to many concerned with the high cost in casualties likely to result from a ground offensive. Nevertheless, achieving the objective would be very difficult given the limited forces available in September.

One of the critical lessons of the Vietnam war was that no military intervention should be contemplated without a clearly defined objective, a clearly understood strategy, and adequate means to achieve the objective. The end-state for an attack against Saddam's military had to be defined precisely in order to know when to proclaim victory and call a halt to the operation. In September and early October, the only reasonably achievable end-state was simply to eject Iraq from Kuwait and to restore the legitimate government. Destroying Saddam's war-fighting capabilities and holding him accountable were, at that time, not achievable with available forces.

Schwarzkopf's instructions to avoid an attack into the Iraqi's strongest defenses called for an indirect approach to reach and destroy Saddam's operational center of gravity. The concept of center of gravity suggests that a nation's ability to fight can most readily be unhinged by seeking out the one pivotal element of its force that, if destroyed, would cause all of its force to collapse. In addition to military power, a center of gravity might include political leadership, the economy, a critical industry, or the will of the population. Only by identifying an assailable center of gravity can an attacking force assure decisive results without wasting resources on secondary efforts. Schwarzkopf identified Iraq's first military center of gravity as the Republican Guard.

Enemy

The planning group began their analysis of the enemy with very little firsthand knowledge. In September, information revealed a well-equipped, battle-hardened foe who would have the advantage of secure internal lines of communication. He had an impressive array of modern equipment, mostly of Soviet design, including weapons of mass destruction. An unknown factor was the will of the Iraqi armed forces to fight. For nearly 40 years the intelligence telescope had been focused almost exclusively on the Warsaw Pact. Now, painfully little time was available to shift focus to the KTO. While the intelligence focus shifted from Europe to the Middle East, the group concentrated on what little they could glean from Iraq's performance in the eight-year war with Iran and in the short two-day operation to seize Kuwait.

The historical insights available from the Iran-Iraq War were meager to say the least. Shortly after its September 1980 attack into Iran sputtered to a halt, the Iraqi military went into a strategic defense, seeking to wear down the numerically superior Iranian army. The initial battles had been too bloody even for Saddam, so he used less costly local attacks to secure more defensible terrain or to blunt Iranian aggression. The resulting stalemate continued until 1985 when the Iraqis experimented briefly with limited offensives supported by heavy doses of artillery and air support.

Gradually, the Iraqis became more active and began to exploit the superior strategic and operational mobility of their reserves.

The Iranian offensive which captured the al-Faw peninsula in 1986 effectively ended the stalemate. In April 1988, the Iraqis launched a series of corps-level counterattacks to regain territory lost to Iran. The operations were carefully rehearsed and meticulously orchestrated. The Iraqis preceded each division- and corps-level attack with an extensive heavy artillery preparation, accompanied by liberal use of chemical weapons and air strikes. Preparation, planning, and brutal application of firepower paid off. By July, the war was essentially over. Throughout eight years of war, the Iraqi army had engaged in offensive operations for fewer than eight months.

As a result of the Iran-Iraq War, the Iraqi army expanded from 12 divisions of 350,000 men in 1982 to 56 divisions of 1,100,000 men by late 1989, making it the fourth largest military power in the world. It was organized and trained along British lines and was largely equipped with the best tanks and armored vehicles Moscow and other foreign arms bazaars had to offer.

The Iraqi army consisted of three distinct levels of competence. Infantry divisions were on the bottom. In the Iran-Iraq War, they proved capable at best of maintaining a static defense. Since the end of the Iran-Iraq War, Saddam had allowed his infantry divisions to atrophy so that even a respectable static defense in Kuwait would be beyond the proficiency of most without significantly more equipment and training. One notch up in competence were the regular army heavy divisions, manned by long-service professional soldiers trained well enough to keep tanks and armored vehicles operating. At the top was the Republican Guard.

If the regular army provided the bulk of the Iraqi military muscle, the Republican Guard was its heart. Created originally as a palace guard of two brigades, by July 1990 the Guard had grown to a separate corps with 28 combat brigades arrayed within eight divisions, including armor, mechanized infantry, infantry, and special forces. The Guard possessed the best equipment Baghdad could provide. While a regular army armored division might field 250 tanks, usually a motley mix of older T-54s, T-55s, and T-62s, a Guard armored division had 312 of the more modern T-72s. Some Guard armored brigades had the T-72M1, the best Soviet tank then available on the world market. Similar disparities existed between regular and Guard mechanized infantry divisions. The artillery brigades within the Guard were equipped with Austrian, French, and South African artillery systems, many of which were superior in range to any in the US inventory. Guard air defense units had the proven SA-6

mobile surface-to-air missile, normally used to protect high-value strategic targets.

Because the Republican Guard was Saddam's strategic reserve, he kept them carefully separated from the regular army. The Guard operated directly under General Headquarters (GHQ) control. Many of its officers and soldiers, selected from the very best of Iraq's available manpower, came from Saddam's hometown of Tikrit, and the overwhelming majority were, like Saddam, Sunni Moslems. A notable exception was the Guard commander, Lieutenant General al-Rawi, who, although a Shia, was a Saddam Hussein devotee of unquestionable loyalty and respectable reputation.

Not only was the Guard better equipped, it was better paid. During its expansion in the mid-eighties, the Guard offered enlistees cash bonuses, new cars, and subsidized apartments. As it deployed into the KTO, the Guard continued to maintain a separate and exclusive existence. Guard bunkers in Kuwait were appointed with the best furniture, carpets, and appliances, largely stolen from the Kuwaitis. Closer to the center of the Iraqi logistical system at Basrah, the Guard never ran short of food, water, or military supplies, while regular units often suffered shameful neglect. Officers from regular units were known to cultivate and bribe the Guard for spare parts, supplies, and luxury items.

The Guard's special status came at a high price. Baghdad expected the Guard to fight even if other units folded and positioned them in the KTO to backstop the regular units. Eighteenth century European armies kept unreliable conscripts aligned and moving forward in combat by placing professional NCOs at the end of each file. Armed with short swords and lances, they were to kill any soldier who showed signs of flight. The Guard provided Saddam's file closers. He positioned them at the theater rear boundary, not only for counterattack, but to block retreat and to punish those foolish enough to run. Nevertheless, counterattack was the Guard's specialty, and several years of successful practice against the Iranians had made them fairly proficient at it.

When the Iraqi army returned to the attack against the Iranians in 1988, the Guard was in the vanguard, translating the lessons of mobile defense into offensive operations. Acting either as an independent force or in concert with regular army formations like the 3d Corps, the Guard conducted the main attack in at least five operations, demonstrating its superior planning, training, equipment, and, most importantly, its esprit de corps. As it became more practiced in the offense, the Guard used amphibious and airmobile forces to cut off retreating Iranian units. To those familiar with past Iraqi operations, the Guard's dominant role in the invasion of Kuwait came as no surprise.

The KTO was so vast that if it was to perform as a theaterwide operational fire brigade, the Guard needed theaterwide mobility. To this end Saddam purchased more than 2,000 heavy equipment transporters, each capable of carrying a T-72 tank great distances over improved roads. He had enough HETs to carry all three Guard heavy divisions in Kuwait simultaneously. Thus the Guard could either reinforce anywhere in Kuwait in fewer than 24 hours or, should the war not develop as planned, be recalled to Baghdad in a matter of days.

Although Saddam treated the Iraqi air force as an elite group, it was not, unlike the Republican Guard, capable of bold offensive action. Its greatest contribution was to preserve its aircraft strength to pose a continuous over-the-horizon threat. To maintain its intimidation value, Saddam made sure his air force remained the largest in the Middle East with a total strength of more than 750 aircraft. However, the quality of the aircraft and crews was very uneven.

The elite of the Iraqi air force was its complement of 64 French Mirage F-1s and their French-trained pilots. The F-1 squadrons executed most of the successful strikes against the Iranians in the Iran-Iraq War. Occasionally they did engage in air-to-air combat, but only when they had numerical superiority. An Iraqi F-1 was responsible for the Exocet strike on the *USS Stark* in 1987, which caused the death of 37 sailors.

Despite its numbers, the Iraqi air force was no match for the Coalition, nor could it offer credible support to Baghdad's ground forces. Close air support, as practiced by the US and other Western air forces, was unknown to them. Iraqi fighter-bombers might attempt independent air interdiction against point targets, but they were incapable of working under the control of forward ground units. Even the Iraqi attack helicopter fleet of Soviet Hinds and French Alouettes and Gazelles was incapable of much beyond rudimentary support as flying artillery.

A large, complex hodgepodge of Soviet, French, and other systems, Iraq's air defense was glossy on the surface but functionally flawed underneath. Baghdad relied heavily on its French-designed KARI command and control network to coordinate air defenses from an underground air defense operations center in Baghdad. The country had been subdivided into five air defense sectors, each under a sector operations center (SOC). Each SOC in turn controlled a number of warning and control regiments and interceptor operations centers. These centers coordinated the flights of air interceptors and the fires of an overlapping system of surface-to-air missiles and antiaircraft artillery (AAA). Should the Coalition destroy the central air defense operations center, the KARI network would be beheaded and each SOC would have to operate independently. Once control of the system was isolated, each segment was vulnerable to being overwhelmed and destroyed in detail. Should a SOC

or subordinate center be taken out completely, an aerial breach would result through which an attacker could strike deep into Iraq.

Iraq protected its forward troops in the KTO from air attack with a mixture of missiles and guns. The most serious threats to army aviation were short-range systems like the SA-9 and SA-13 missiles, along with the shoulder-fired SA-14s and SA-16s. The density of antiaircraft artillery in theater was of particular concern to US Army planners. More than 3,700 AAA systems larger than 14.5mm were spread throughout the KTO. The deployed army supplemented the AAA with the fires of more than 10,000 machine guns, 12.7mm or larger.

Iraq possessed both Scud missiles and weapons of mass destruction. Iraq's Scud-B was originally designed by the Soviets to deliver a one-ton payload to a maximum range of 300 kilometers. The Iraqis modified it during the war with Iran to deliver a half-ton warhead to 475 kilometers. A newer version, the al-Abbas, could range 600 kilometers with the same payload. The modified Scuds were notoriously inaccurate. The al-Abbas at maximum range had an error of about 4 kilometers. Baghdad possessed both fixed and mobile launchers. Intelligence had detected a total of 64 fixed sites in western Iraq, all aimed at Israel. Twenty-eight of those fixed sites were complete, and the remainder were nearing completion. No one knew exactly how many mobile launchers the Iraqis had, but the best guess before the war was 48 of various design. Some analysts suspected the Iraqis were producing more, perhaps many more. The hunt for mobile launchers would be the thorniest problem of the war.

The Coalition most feared Saddam's weapons of mass destruction. He not only possessed them in great quantities, but he had used them on his own people in the past. Saddam had built a large arsenal of mustard and nerve agents and had provided artillery, aircraft, and missiles capable of delivering them. The same systems could deliver Saddam's anthrax and botulinum biological weapons.

The Iraqi military machine was a significant opponent. It was a huge force, larger in total size than the German field army in France during the Normandy landings in World War II and twice as large as the North Korean army that invaded South Korea in June 1950. It was also well-equipped. The more advanced armor on the T-72 and T-72M1 could sustain direct hits from older 105mm rounds fired by the US M-1 Abrams at 2,000 meters. Iraqi T-72M1s and T-72Ms had laser range finders, and the 125mm gun, standard on all T-72s, could penetrate the Abrams at 1,000 meters. The BMP-1, the world's first operational infantry fighting vehicle, was equipped with a 73mm smooth-bore cannon. Their French-made self-propelled 155mm artillery systems had automatic loaders that allowed for high rates of fire.

Stocked with more than 320,000 tons of ammunition openly bunkered in vast depots inside the KTO, the Iraqi army could fight for two weeks without resupply. An additional two million tons of ammunition were dispersed inside Iraq, allowing the army to absorb a great deal of punishment and continue to fight. The Iraqis were experienced in combat, although with the exception of the Republican Guard, "battle-hardened" would prove to mean "battle-weary." The senior army leadership of committed professionals had learned a great deal about fighting during eight years of war. Most officers possessed university degrees from local or foreign institutions and the more senior staff officers had trained at the best Soviet, Chinese, and European staff colleges. Senior staffs had demonstrated respectable skill in planning and executing the invasion of Kuwait. In two weeks, the Iraqis had been able to deploy eight divisions, 140,000 troops, 1,100 tanks, 610 artillery pieces, and 610 armored vehicles, accompanied by engineers, air defense, and all required logistical support. Some units had traveled as far as 700 kilometers to reach the Kuwaiti front. Finally, to support their military operations, the Iraqis had established a redundant command, control, and communications network unequaled even by some first-rate Western armies. The network reached from each of the multiple command centers in and around Baghdad, through intermediate headquarters in the KTO, to the lowest Iraqi unit along the Saudi border.

Like any army, Iraq's also had weaknesses. The most striking was Saddam Hussein. Never trained as a military man, Saddam had a reputation for exercising strict personal command over his armed forces in the field. Overcentralization by an incompetent leader stifled Iraq's ability to put together a credible offensive operation for most of the eight-year war with Iran. Only after the disastrous al-Faw campaign in 1986 did Iraqi general headquarters gain some degree of planning and operational leverage, and only then did the army perform well enough to beat the Iranians. Even with such a significant concession, however, Saddam reserved major decisions for himself, and he rewarded failure harshly. On one occasion he executed a unit commander merely for getting lost in the mountains. After seeing the price of failure so dramatically demonstrated after the Iranian seizure of al-Faw, senior Iraqi commanders, particularly those in the Guard units, sacrificed themselves and their men slavishly to avoid disgrace in the eyes of their leader. No commander would consider independent action, particularly if failure was likely. Thus CENTCOM planners realized from the beginning that should they be able to sever the linkages between Saddam and his commanders in the field, the army would probably be incapable of large-scale maneuver.

Another vulnerability was the quality of manpower available to Iraqi general headquarters. Challenging missions like attack, passage of lines, and counterattack could only be accomplished effectively by certain

units, principally the Guard and 3d Corps. Even within the best units, tactical and technical proficiency was not always apparent. Complex artillery skills—particularly those requiring extensive training, such as counterfire and rapid adjustment of observed fire—as well as flexibility and mental quickness, were simply beyond the limited competence of most Iraqi artillerymen. Iraqi artillery commanders were capable only of executing planned, massed fire missions. Even with reasonably proficient crews, good tanks and armored vehicles were nothing without proficient, flexible commanders. Iraqi maneuver units had repeated problems in coordinating boundaries during the Iran-Iraq War. Most significantly, other than during the short attack into Kuwait, the Iraqis had never demonstrated much ability to fight at night.

Not all Iraqi equipment was first-rate. Although the T-72 and its improved versions, the T-72M and T-72M1, were excellent, they made up less than 20 percent of the Iraqi tank inventory. Only the improved T-72s had laser range finders, and even they had to close inside 2,000 meters to have any hope of killing an Abrams. As for the BMP-1, the American Bradley was a quantum leap ahead in lethality, mobility, and crew survivability. The Iraqi artillery had a long range to be sure, but without precise target-finding devices or equipment to increase accuracy, such as meteorological stations, computerized fire control, and precision position-locating and ranging devices, the total artillery system was grossly inaccurate. Most of the artillery was towed, leaving it at the mercy of counterbattery fires, especially when prime movers had been destroyed.

Finally, the Iraqi army would be on its own in the KTO. Neither the air force nor the air defense command was capable of protecting ground forces from air attack. Soldiers could rely only on camouflage, deception, and entrenchment to survive prolonged aerial bombardment. The Iraqi logistics system was hard-pressed just to supply the army in peacetime. Even a moderate interruption would effectively deny units along the Saudi border access to such essentials as food and water.

While planners could count tanks and artillery pieces, they were less successful in measuring the will of the Iraqi military to fight, an intangible that would potentially have enormous impact on the war. The Iran-Iraq War seemed to show that the frontline infantry were as badly motivated as they were equipped and trained. If subjected to any pressure whatsoever, they would break and run. The regular army heavy divisions would fight, probably with some tenacity, surrendering only if retreat were impossible. The Guard, however, was expected to fight to the death and to maintain its cohesion and ability to fire and maneuver even if badly mauled.

Terrain and Weather

Planners expected both terrain and weather to influence operations in the KTO significantly. The US Army had learned to fight in the desert during years of experience at the National Training Center and in numerous BRIGHT STAR exercises in Egypt and Sudan. However, not all deserts are the same. The planners were particularly concerned about trafficability of the desert terrain in the western end of the KTO. On the coast, where Desert Shield forces were initially concentrated, the ground is generally flat with a well-developed network of roads connecting the big ports and coastal cities. Just off the roads, however, large sand dunes and sabkhas impede movement. Some dunes rise 20 or more feet presenting serious hazards to low-level flight, particularly at night. Sabkhas are like thin ice when it rains. Soldiers can traverse them on foot, but vehicles often break through and wallow up to their bellies in mud.

Following the Saudi-Iraqi border from about 10 miles inland west to the Wadi al-Batin, the land becomes flatter, with fewer dunes and numerous small rocks. Approximately 125 miles inland, the Wadi al-Batin offers both opportunity and threat. The wadi is little more than a pronounced dry streambed that runs the length of the Kuwait-Iraq western border and continues well south into Saudi Arabia to form a natural attack route from Saudi Arabia northeast into Iraq. Conversely, the wadi also points like an arrow toward King Khalid Military City or Riyahd farther to the south. The wadi would prove useful mainly as an aid to ground and low-level air navigation. Its gentle, wide, sloping sides would not hinder crossing or movement unless flooded by winter rains.

The area between the wadi and Rafha, 170 miles farther to the west, becomes progressively more rocky. The Saudis knew that this large plateau was at least trafficable by vehicle inside Saudi Arabia because Bedouins routinely crisscrossed the area in their trucks following herds of sheep, goats, and camels. Rocks were hard on tires and would play havoc with the rubber track pads of armored vehicles, but the region was generally passable. No one knew, however, how hospitable this same region would be farther north inside Iraq. This unknown was significant because any offensive thrust into Iraq that swung west to avoid the main Iraqi defenses would have to transit this desert. Purvis' concern and curiosity were both heightened when the Iraqis appeared to have neglected defending the area. They would only have done so, the group surmised, if they knew it to be impassable.

In September, all the group had to work with were maps, data provided by employees of ARAMCO, and what little they could glean from Saudis familiar with the area. Maps for the whole region were in short supply, some were outdated, and even the most current offered very little information on trafficability. Major Pennypacker would later undertake a

The Purvis group developed four major mobility corridors from very limited information on the Iraqi desert.

reconnaissance by vehicle and helicopter to sample the terrain firsthand. However, in the early stage the mission was so closely held that the group could not ask too many questions about the region west of the Wadi al-Batin for fear of exposing their offensive planning options.

Saudi weather is among the most inhospitable in the world, the temperatures in August and September sometimes reaching 140 degrees Fahrenheit. American soldiers simply could not function efficiently in such heat. The planning group seriously questioned the ability of soldiers to function at all clad in heavy chemical protective overgarments. Units could not be expected to go into action without at least three weeks of conditioning and acclimatization. Heat would also affect engine coolants and seals and could actually warp metal and plastic parts. Dust, sand, and heat are deadly enemies to electronic equipment like radios, computers, and the "black boxes" on aircraft and other combat vehicles.

Between November and March, temperatures moderate considerably. Nighttime lows sometimes dip below freezing. Sandstorms are common during the winter months, whipping clouds of fine dust miles into the air and limiting observation to less than 100 meters. The region receives most of its limited rainfall during this period, often in deluges that turn dry wadis into raging torrents. When wet, the clay-based sand turns into thick, viscous mud. Analysis of the weather alone favored an offensive operation between November and March to avoid the worst heat of the region.

Troops and Transport Available

The troops available to Schwarzkopf were a mix of US and Coalition army, navy, air, and marine forces. In September the Coalition was clearly outnumbered. XVIII Airborne Corps was still in the process of deploying, although by early October it would field the 82d Airborne Division, the 101st Airborne Division, the 24th Infantry Division, the 3d Armored Cavalry Regiment, and the 12th Aviation Brigade. The 1st Cavalry Division was still en route. The Marine amphibious force had most of one division ashore with its accompanying air wing. Coalition forces in September included the initial elements of a British armored brigade and a French light armored division, the Royal Saudi Land Forces, two Saudi Army National Guard brigades, the Kuwaiti brigade, and a mix of smaller Arab forces from Egypt and several other countries.

The Coalition air forces were formidable, and though the Army planners were focusing on a ground offensive, the role of air power would be a key part of the overall campaign. As its name implies, AirLand Battle doctrine relies on exploitation of the third dimension to a degree unequaled by any other doctrine in history. To be successful, every combat function of the coming campaign, including fire support, reconnaissance, liaison, communications, and maneuver, would bring an

essential and indivisible aerial component to the battlefield. Army aviation would contribute to the effort, but the AirLand Battle tenet of depth, which seeks to engage the enemy ground forces at the earliest stages of battle, remained largely the preserve of the air forces. For that reason, the planning group sought from the beginning to synchronize air and land components into a single joint force capable of striking the enemy from the depths of his territory to within immediate contact with frontline soldiers. The guidance by September 25 stipulated that the third phase of the air offensive, battlefield preparation, would have to reduce the Iraqi armored forces by at least 50 percent in order to achieve desired force ratios for the ground attack. This figure was originally derived during INTERNAL LOOK planning for the counterattack phase of OPLAN 1002-90. An old doctrinal rule of thumb calls for at least a three-to-one force advantage over an opponent before launching an offense. Ideally, a six-to-one or better ratio at the point of penetration is desirable to ensure success. Favorable ratios can be achieved in two ways. An attacking force can concentrate an overwhelming mass in front of a weak spot in the enemy's defenses, or the force can wear down the enemy's defenses with fires before close combat begins. The campaign plan sought to do both.

Major Eckert struggled with the assessment of some of the Coalition partners in his analysis of friendly troops available. Two parallel efforts begun early in the deployment were directed at this problem. The first was General Yeosock's formation of the Coalition Coordination and Communications Integration Center (C^3IC). The second was the employment of Special Operations forces, like Master Sergeant Lloyd's team, to train with and assess the fighting qualities of Coalition forces.

Schwarzkopf considered the Coalition's center of gravity to be the Coalition itself. If the frail bonds of the Arab-Islamic commitment to the US-led Coalition could be broken, perhaps by drawing Israel into the war, the Coalition would quite likely be fragmented and torn apart. He knew that forging some unusual instrument at the scene would be necessary to hold the Coalition together. Yeosock used the C^3IC at the beginning of Desert Shield to gain entrance to the Saudi power base and to obtain host-nation support. Later, along with a network of mobile liaison teams, the center would provide another avenue for information and clarifying orders. The C^3IC helped to hold up a fragile Coalition that did not benefit from any long-term agreements like those of NATO. Without status-of-forces agreements and other established standards like those in Europe, the C^3IC provided one avenue to solidify the Coalition. Yeosock, and later Schwarzkopf, turned the C^3IC into an ad hoc "directed telescope" that they could focus on specific issues for resolution in an informal, collegial manner. Collocated at the Saudi Ministry of Defense building with Schwarzkopf's CENTCOM and the Saudi commander's headquarters, the C^3IC was jointly manned by American and Saudi officers.

Special Operations forces included a special aviation battalion, a psychological operations group, civil affairs units, and a variety of other uniquely organized and trained elements. For the most part the control of these units would remain under the Special Operations Command Central, or SOCCENT, commanded by Colonel Jesse Johnson. On August 31, the Special Forces Group from Fort Campbell, Kentucky, was first to arrive in country, and its initial mission was to support the Saudi Arabian land forces and the Saudi Army National Guard. In this case, foreign internal defense, or FID in Special Forces jargon, included assistance in organizing, training, and advising the Arabs in both conventional and unconventional warfare.[11] What Schwarzkopf needed most from Special Forces was some semblance of "ground truth" concerning the Coalition forces' ability to fight—a delicate problem. The SOF became another "directed telescope" with enough experience to draw frank, objective conclusions and pass them in confidence to CENTCOM.

Because logistics could become an Achilles heel for the Coalition, whatever plan was developed would have to undergo the litmus test of supportability. General Pagonis' work in establishing the sustainment base for Desert Shield was an important first step, but it centered on supporting a defensive enclave restricted to the coastal region. The enormous distances covered by any offensive maneuver would place a

Special Forces NCOs taught essential combat skills to newly enlisted Kuwaiti volunteers.

particular strain on available transportation. The American Army was organized and equipped for defense in Europe and was therefore critically short of long-haul transportation. Trucks of all sorts, particularly fuel tankers and heavy-equipment transporters, were continually in demand. Throughout the campaign, available transportation would be an annoying tether on Purvis' planning concepts, continually reining him back toward logistics bases each time he stretched too far too fast with too large a force.

Time Available

Assessing time available consists of determining when to start, how long actions will take, and how to synchronize the actions of each segment of an operation so that all work in synergy. No one could tell if or when the Coalition would go on the offensive. When to start a one-corps offensive depended on the maturity of the logistics buildup and how long it would take XVIII Airborne Corps to be fully combat-ready. Estimates indicated that full readiness would require between 45 and 90 days. Thus, mid-October was the earliest any attack with available forces could be attempted.

Determining the length of the operation was a matter of predicting the time necessary for each of the four phases. The US Air Force estimated that the first three phases of the campaign would require about two weeks. The length of the fourth phase, the ground offensive, depended on the success of the previous phases and other subjective factors difficult to estimate. With known rates of movement and estimates from the intelligence preparation of the battlefield, planners could anticipate Iraqi actions and reactions to the Coalition attack with some measure of confidence. Yet the only assertion that could be made about the length of the fourth phase was that it would take longer with a smaller force than with a larger one. It would also cost more in casualties.

What distinguishes a great plan from a good one is the timing necessary to synchronize a large number of concurrent and interdependent events. Schwarzkopf's task would be to orchestrate the movements and actions of many disparate parts to bring them harmoniously to exactly the right place in time to achieve a single aim. Since the factors of METT-T change with time, any analysis of an impending operation must be continuous. The group's initial five-day study of METT-T, completed on September 25, was only the first iteration of an assessment that would be revisited over and over again. In those first five days of collecting information, Pennypacker and Archer had only scratched the surface of Iraqi capabilities and limitations. Of all the factors of METT-T, the enemy was a true moving target. Other than the enemy, much of the detailed early analysis would change very little over time. The assumptions built upon that information would prove remarkably prescient once real war began.

THE FIRST OFFENSIVE PLAN

The group began the formal development of a one-corps plan with a briefing to Admiral Sharp, the CENTCOM J5, on September 25. Sharp was a personable but demanding officer willing to listen and learn more about ground warfare. Purvis first wanted to ensure that his planning imperatives were on track. He told Sharp that the long distances throughout the theater and the limited transport made a sweeping end-around move infeasible. Therefore, the plan intended to concentrate as much combat power in the smallest space possible against the weakest Iraqi point he could find to lessen the cost of a penetration. Once through, the force would bypass centers of concentration en route to the Republican Guard. Second, he verified the need to destroy 50 percent of the enemy's combat power during the third phase of the air operation. He planned to measure combat power in terms of destroyed enemy vehicles and equipment. The group also highlighted the imperative to keep an unblinking intelligence eye constantly on the enemy in order to react immediately to Iraqi countermoves.

Armed with Sharp's approval, the group developed several options for a single-corps attack. On October 2, Lieutenant Colonel John Carr from the 21st Support Command joined the group for a week to inject a dose of logistical feasibility into any concept they might devise. In developing courses of action, the group resolved to retain enough combat power in the rear to secure CENTCOM ports and reception airfields against terrorists. They would also need Patriots to protect the force from air or Scud missile attack. Until the eve of the armistice, CENTCOM believed that the Iraqis would employ chemical weapons, probably at the point of penetration but potentially anywhere in the theater. The Purvis group's mission statement for the one-corps offensive plan was simple: "On order, friendly forces conduct offensive operations to eject Iraqi forces from Kuwait; be prepared to secure and defend Kuwait." [12]

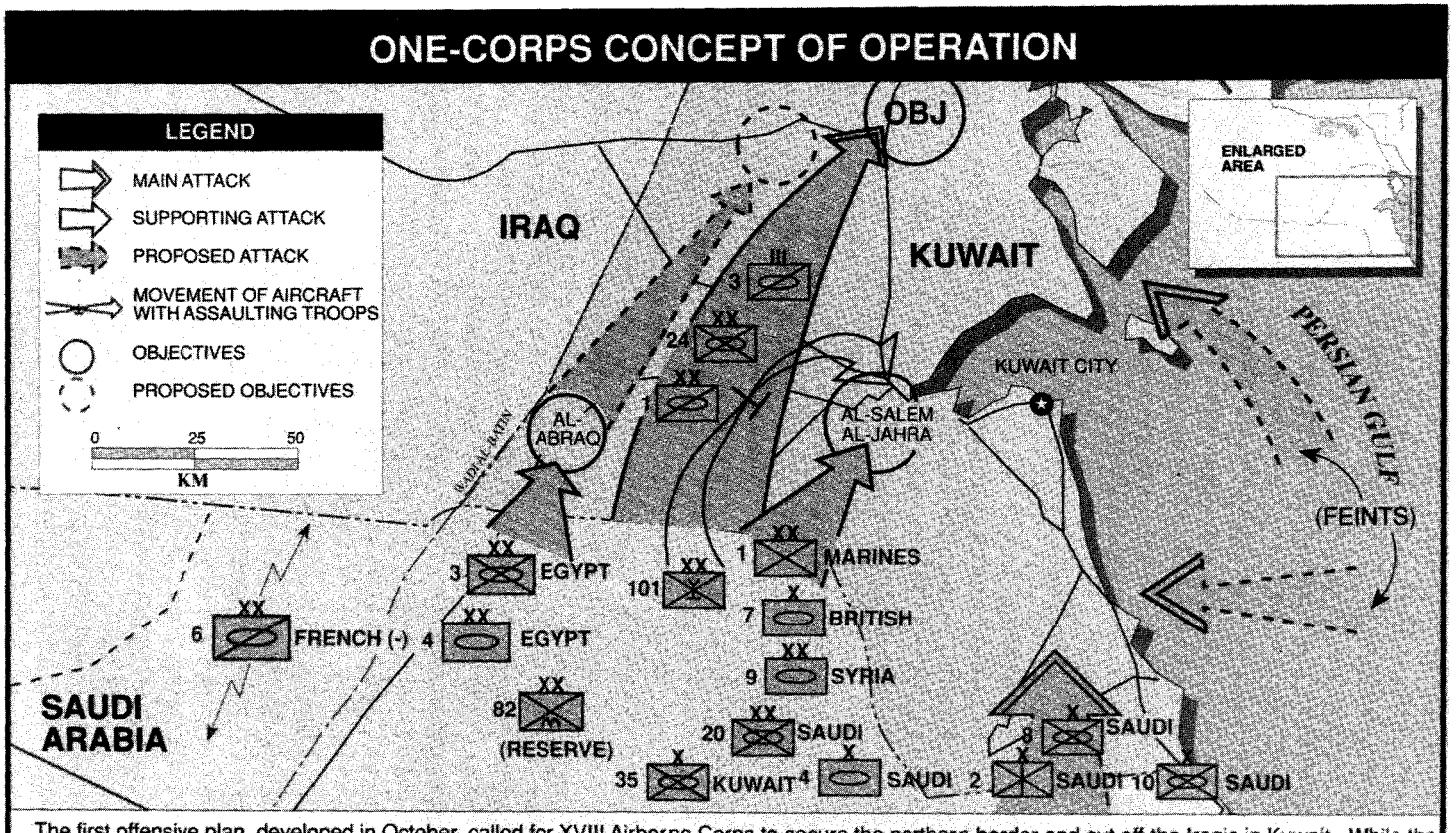
On October 4, Schwarzkopf held a map exercise at the Oasis Club on Dhahran Air Base for XVIII Airborne Corps and division commanders to review the defense plans. Convinced that Saudi Arabia could be defended successfully, he told his commanders to start thinking about the offense.[13] Not knowing exactly what the CINC had in mind, General Luck instructed his subordinates to concentrate on developing lower-level plans that would apply regardless of the grand design. He knew, for example, that any plan would have to take out the enemy's artillery and destroy reconnaissance and forward defensive positions, so he ordered the development of a counterbattery program and a plan to carry the corps on a limited offensive through the two Iraqi defensive belts.

Equally important was the "shot in the arm" that this opportunity would give to soldiers not accustomed to waiting for the enemy to act

first. As far back as August, before deploying to Saudi Arabia, the commander of the 101st Airborne Division's 1st Brigade required each of his three infantry battalion commanders to plan for potential attacks into Kuwait. The first battalion planned an air assault defense against an armored counterattack, while the second developed plans for an air assault into Kuwait City to seize and defend key installations. The third planned an air assault onto the high ground north of Kuwait City near al-Jahra.[14] Now their planning could take on a new and more immediate dimension.

Purvis presented the one-corps concept and three courses of action to Schwarzkopf on October 6. Schwarzkopf selected the first course of action for further study, but he was troubled by the considerable risk that every option presented. Even if the Air Force succeeded in isolating the KTO and destroying 50 percent of the Iraqi ground combat power, the Coalition would still attack greatly outnumbered against a relatively unbroken enemy. The concept he chose called for an extensive two-week air attack, followed by an advance into southern Kuwait between the "elbow" and the tri-border area. Coalition ground forces would drive northeast into Kuwait through the defensive line and then turn east to sit astride the main north-south highway to Basrah out of Kuwait City. When ordered to proceed, the attack would continue to secure the northern Iraqi-Kuwaiti border and cut off the Republican Guard in the KTO before the Guard realized what the corps was doing. With the border secured, the Guard could either attack or give up and walk out of the KTO while air attacks and artillery struck their abandoned equipment. The 24th Infantry Division would make the main attack with the 1st Cavalry Division and the 3d Armored Cavalry Regiment, while the Marines and the 101st protected the rear and the 82d protected the lines of communication. Coalition forces would protect the left flank. Schwarzkopf was not terribly comfortable with the one-corps option, but he recognized that the plan was as good as could be expected with the forces available. His greatest concern was not whether the operation would succeed; if air power did all that was expected, the attack would be able to move through the Iraqis fairly quickly. The real issue was the prospective human cost of the operation. Even with all the advantages of technology, initiative, and air superiority in his favor, the one-corps option would mean that too many soldiers would die. Should things go badly, the friendly force could stop and protect itself at any time, so it was not in jeopardy of complete destruction, but the mission might fail if such a stop became necessary.[15]

Schwarzkopf may not have liked the concept any more than his planners, but under considerable pressure from Washington to present some offensive option, he sent his chief of staff, General Johnston; Air Force Brigadier General C. Buster Glosson; and Purvis to Washington. Air Force



The first offensive plan, developed in October, called for XVIII Airborne Corps to secure the northern border and cut off the Iraqis in Kuwait. While the concept was the best that could be accomplished with existing forces, the potential for high casualties led to the commitment of a second corps.

Major Rick Francona, on loan to CENTCOM from the Defense Intelligence Agency (DIA), also attended. On October 10 each of the attendees briefed Cheney and Powell at the Pentagon. The next day the group went to the White House to brief the President. The air portion of the plan was accepted without much argument, but the ground attack stirred up some controversy. Johnston's wrap-up of the briefings stated that success could not be guaranteed without an additional corps and he indicated that at least 90 days were necessary to accomplish such a reinforcement. Purvis recalls that some of the civilian members present did ask about an Inchon-like amphibious option, which the military leaders were quick to oppose. The need for a second corps had surfaced.[16]

TWO-CORPS OPTION

After Purvis returned to Riyadh on October 15, Schwarzkopf wasted no time ordering him to begin planning for a two-corps attack. Now the planners had the forces to develop a feasible option, although Schwarzkopf ruled out both amphibious and airborne operations. While they both held promise, both would put American lives at greater risk. An amphibious assault on the heavily fortified Kuwaiti coast was impossible unless the sophisticated mines guarding the approaches could be cleared, a task that the Navy claimed could require as long as a month. CENTCOM's early assessment of the Iraqi air defense network suggested that an airborne insertion would be equally costly. Isolated and relatively immobile once on the ground, the 82d would be difficult to support and sustain from the air alone. Airborne forces were ill-suited for warfare in open desert, particularly against mobile armored forces, and the Guard would be no more than a day's march from any prospective airhead. Schwarzkopf believed airborne forces would be better suited to attack airfields or built-up areas less likely to contain tanks. He did see real value in using the airborne and Marine forces to tie down the Iraqis by making them believe that both options would be exercised. In fact, with their high media profile and fearsome reputation, airborne and Marine amphibious forces would distract Iraqi planners until the war's end. The amphibious threat alone forced Saddam to keep seven divisions focused on the coast to crush a landing that never came.

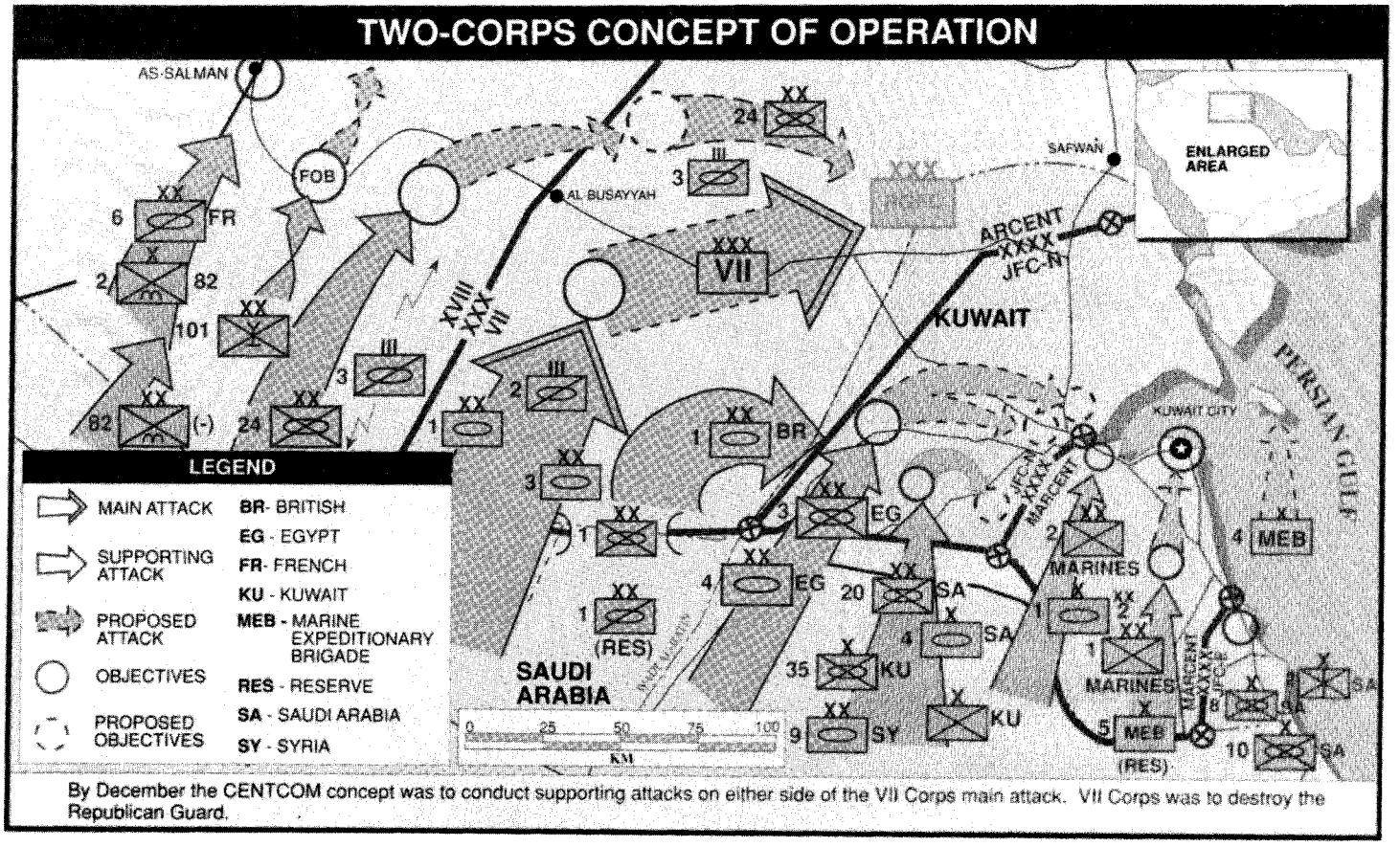
On October 16 the Purvis group began to develop a plan for a two-corps attack deep inside the great Iraqi desert west of the Wadi al-Batin. They had to identify how a second corps should be configured. Although it had not yet been identified, VII Corps was the most likely candidate. Clearly, the corps would need to be armor-heavy to match the Iraqi predominance in armor. It made sense to give the prospective heavy corps responsibility for the main effort. Unquestionably, the Guard would be the center of gravity and the main objective. To match such a powerful mass of first-rate armor would require at least three heavy divisions. Even

if the air attack destroyed up to half of the Iraqi ground forces, the Coalition would only outnumber the enemy about two to one at the point of the attack. The prospects offered by a swing several hundred kilometers to the west might give logisticians heart failure, but the maneuver conjured up images of great end runs like Rommel's sweep around the British 8th Army at Gazala in May 1942 or Guderian's XIX Panzer Corps' brilliant slip through the Ardennes and dash to the English Channel in May 1940. Logisticians might dampen the ardor of the planners, but the prospect of a second corps opened up limitless opportunities to exploit the unmatched agility of American armored forces.

On October 17 Schwarzkopf momentarily lifted the veil of secrecy that surrounded the planning effort so that the British forces commander, Lieutenant General Sir Peter de La Billiere, and Yeosock could be briefed separately on the one- and two-corps planning options. Both generals believed the as yet sketchy two-corps plan was feasible and supportable so long as both corps swung far enough west of the Wadi al-Batin to envelop all of the static Iraqi forces and avoid the dense Iraqi defensive belt. They pointed out that psychological operations and strategic deception, especially in the case of the one-corps plan, would help to even the odds by causing desertions and fooling the Iraqis about the actual location of the attack. Both also zeroed in on the importance of establishing logistical bases deep in the western desert to support a wide swing for the two-corps attack.

In giving the heavy corps responsibility for the main attack west of the Wadi al-Batin, the planners had to determine how other forces would be employed in secondary and supporting attacks. The group considered putting XVIII Airborne Corps either east or west of the main attack or even passing the main attack through XVIII Corps. By October 21 the different options were complete and had been approved by Admiral Sharp and Brigadier General James Monroe, the ARCENT G4, for presentation to the CINC.

When Schwarzkopf saw the concept for a two-corps attack, he suddenly became very animated and enthusiastic about the course of action that placed XVIII Airborne Corps wide to the west of the main attack. Standing at the map and pointing at the two corps arrows, one aimed at the Euphrates River and the other to the east of the northern border of Kuwait, he said in a booming voice, "I sit on Highway 8... I've threatened his Republican Guard; now I'll destroy it."[17] Although no one knew it at the time, at that moment the concept of the Great Wheel became fixed in the CINC's mind. The XVIII Airborne Corps was now committed to cutting Highway 8 south of the Euphrates River in what would prove to be one of the longest single envelopments in history. The as yet unnamed heavy corps would conduct the main attack between the wadi and XVIII Corps and sweep northeast to secure the Kuwaiti northern border with



By December the CENTCOM concept was to conduct supporting attacks on either side of the VII Corps main attack. VII Corps was to destroy the Republican Guard.

Iraq. The Marines were originally plotted adjacent to the main attacking corps just east of the wadi and assigned a very limited attack objective that would secure the ARCENT lines of communication. Coalition Arab-Islamic forces would have similarly limited attack objectives along the Kuwaiti southern border to tie down frontline Iraqi units. Amphibious forces would remain embarked to threaten the Kuwaiti coastline. Schwarzkopf's only change to this concept was to insist on engaging the Republican Guard force before going on to secure the Kuwaiti northern border. He emphasized that the Guard was the *main operational objective* and that it must be completely destroyed.

SELECTING A CORPS

In October, at the same time that rotation of divisional-size units and additional Reserve call-ups were being considered, the ARSTAF began to look more intensely at reinforcement options. Though the two-corps plan would not get aired outside of Schwarzkopf's tight inner circle until after the decision to send a second corps had been made, it was evident that any reinforcement would have to be in the form of one of the Army's heavy corps. The three candidates were III Corps at Fort Hood, Texas, and V and VII Corps in Germany.

III Corps had already supported the Desert Shield deployment with the 1st "Tiger" Brigade of the 2d Armored Division, the 3d Armored Cavalry Regiment, and the 1st Cavalry Division. The corps still had a brigade of the 2d Armored Division, the 1st, 4th, and 5th Infantry Divisions (Mech), and the large 6th Cavalry Brigade (Air Combat) equipped with Apache helicopters. With some of its heavy forces already in the Gulf, sending the rest of the corps made sense. However, three concerns argued against using III Corps. First, deploying the rest of the corps would deplete the Army of its Stateside heavy forces, and to take such a risk flew in the face of Vuono's readiness vector should another crisis arise. Second, each of the corps' heavy divisions had a roundout brigade in the Reserve components. Earlier concerns with mobilizing and deploying the 48th Infantry Brigade for more than 180 days remained, and the Army knew the other roundout brigades would take some time to become combat ready. The other roundout units faced similar difficulties. Third, the distance from the United States to the Gulf argued against III Corps. If the reinforcement was to be expeditious, the Army could not afford to have three heavy divisions bobbing about at sea for more than four weeks. The state of some of III Corps' equipment also caused concern. The divisions had not all been modernized to the M1A1 Abrams, for example, and the 6th Cavalry Brigade (Air Combat) had not fully recovered from extensive wind damage to many of its aircraft caused by a storm that devastated Fort Hood in 1989. Collectively, the Army planners concluded they would get more combat power more quickly by turning to Europe.

Ordinarily, deploying one of the Germany-based corps would be out of the question. First, it had never been done in more than 45 years of standing watch in Europe, and second, getting NATO approval for an out-of-theater deployment seemed unlikely. Fortunately, times had changed from the earlier tensions of the Cold War. The two Germanies were reuniting, the Berlin Wall was down, and American cavalry no longer patrolled along the Warsaw Pact border. Furthermore, the Army had already broken the mold in a small way on the out-of-theater deployment with V Corps' 12th Aviation Brigade which had joined XVIII Airborne Corps in the Gulf. This was more than a symbolic breaking of tradition. The way was open to an even larger effort if the political hurdles could be overcome. Perhaps the deciding factor in selecting a European-based corps over a US-based one was the existing plan to inactivate VII Corps. In any event, both European corps were fully modernized and the distance from Germany to the Gulf could be covered in only two weeks' sailing versus four to five for III Corps.

Some negotiation over the units to be sent was still necessary with Commander-in-Chief, US Army Europe and Seventh Army, General Crosbie Saint. General Saint wanted to carefully select which units to send in order to keep a viable force in Germany and to stay on track with as much of the scheduled force reduction program as possible. The two corps in Germany were essentially equal. Sending VII Corps to the Gulf would serve as a stopover before inactivation in the United States. The eventual decision was a compromise. VII Corps would deploy with its headquarters, support structure, and 1st Armored Division, along with V Corps' 3d Armored Division and 1st Infantry Division (Mech). Notably, only the Army of the eighties could have built a corps for combat in this manner. The Army shared a common doctrine under AirLand Battle that was understood and followed. Soldiers trained to the same standard proven on the "battlefields" of the NTC and at Grafenwohr and Hohenfels. Officers shared a common doctrinal background. Elimination of regional proclivities between major commands had fused the Army into a single fighting machine with interchangeable parts—a machine that would be tested in February when the last arriving combat brigades would go directly from the docks in ad-Dammam into attack positions as the ground war started.

THE CHAIRMAN ENDORSES THE TWO-CORPS PLAN

General Powell met with Schwarzkopf in Riyadh on October 22 and 23. After being briefed on both the one- and two-corps options, Powell assured Schwarzkopf that he would get whatever he felt he needed to succeed. Upon his return to Washington, Powell endorsed the two-corps plan and recommended reinforcing CENTCOM with VII Corps as soon as

possible. Meanwhile, Purvis' planning group had to sort out many issues that Powell raised during his visit. For one thing, the logistics buildup and force positioning had to be delayed until the last possible moment in order to convince the Iraqis that the attack would come directly at them through Kuwait rather than around their right flank well to the west. Should US forces reposition themselves for the attack too soon, Saddam might react by moving the Republican Guard into the western desert to oppose them.

Schwarzkopf wanted Yeosock to flesh out the details of the theater ground plan for CENTCOM at the same time that he worked on the ARCENT offensive plans. He temporarily transferred Purvis and his planning group to ARCENT on October 24 to work under the operational control of Brigadier General Steve Arnold, the ARCENT G3. It was an unusual arrangement, to be sure. The group remained in the CENTCOM building for security reasons, but now, at least mentally, moved down one level of command to work on time sequencing and phasing for both the one- and two-corps options. Even though on October 25 Secretary Cheney announced the reinforcement of the theater on all national networks, this dual effort would continue for the next five days until Schwarzkopf told the planners to focus exclusively on the two-corps plan.

While the CINC's planning group was still playing with the "big pieces" of the entire Coalition ground force, Arnold was able to get permission from Schwarzkopf to bring a few more planners into the game. On October 26, the group briefed selected XVIII Airborne Corps personnel and two days later picked up a small group from the corps and ARCENT to aid in the effort.

VII CORPS PREPARES TO DEPLOY

By the time the President announced the deployment of VII Corps on November 8, 1990, the situation in the Gulf had reached a point where offensive action seemed inevitable. The VII Corps commander, Lieutenant General Frederick Franks, Jr., had received enough warning to alert a few of his staff and commanders to prepare for deployment from garrisons in Germany. In fact, as early as August, Franks had had the foresight to keep planning efforts warm for eventual deployment. The 4-229th Attack Helicopter Battalion of the corps' 11th Aviation Brigade had been alerted in August to deploy with its 18 AH-64 Apaches to join the 12th Aviation Brigade already en route to the desert. The warning order set the corps staff in motion and obliged them to focus on a non-European battlefield for the first time in two generations. Even after the 4-229th was dropped from deployment consideration, Franks had wisely kept a select group of planners together. Franks anticipated the prospect of rotating other units with those already in Saudi Arabia should the deployment last many more months. While the group was small, the effort they initially

put forward would prove to be a valuable warm-up for the corps' eventual deployment in November.

Early VII Corps planning efforts were strapped by the same shortage of maps that the Purvis group had encountered. By the time the corps was alerted for deployment, the increased demand severely strained the Defense Mapping Agency. Satellite collection was tasked to provide the data for 1:50,000-scale maps of the operational area. ARCENT had chosen that scale in November and the DMA had suspended all other projects to fill the order. The DMA was then unable to shift production to the 1:100,000-scale maps requested by VII Corps. In total, the DMA produced 13.5 million maps, 10 million in 1:50,000. Getting the maps into the theater and moved forward further strained the already stretched logistical system. The Theater Map Depot moved more than 800 pallets of maps to Dhahran, Riyadh, and KKMC. Units using the "plenty squared" formula added to the problem by requesting blanket coverage of the area. Faced with the logjam on distribution and the lack of 1:100,000 maps, both corps used their organic topographic units to create 1:100,000 maps from the 1:50,000 versions.[18]

VII Corps, nicknamed the Jayhawk Corps, was in a significant state of flux in the fall of 1990. Army force reduction plans called for closure or realignment of many corps units and caserns. The entire 1st Infantry Division (Forward), a reinforced brigade located at Goeppingen, was already in the process of furling its flag. At the same time the corps would receive another Apache unit, the 6-6th Cavalry, fresh from training at Fort Hood. Franks found himself in the bizarre position of having to reduce and realign some units while planning possible deployment for others, all the while continuing to train the rest of the corps as best he could. He wanted to push training harder, but the already tight schedule for major training areas and ranges could not be disrupted on the odd chance that the corps might deploy to Desert Shield.[19] While the announcement on November 8 did not totally surprise the corps, it definitely put many of the reduction efforts on hold for the duration of the war. Two battalions from the 1st Infantry Division (Forward) were among the first units to deploy even though the brigade was in the process of closing down. Franks decided to use these soldiers to assist in running support activities for the corps at the ports.

FAMILY SUPPORT CHALLENGE IN GERMANY

The massive deployment of VII Corps and other units from Germany presented unique family support challenges. USAREUR units deploying in August and September laid the initial groundwork, but the order of magnitude rose tenfold with November's reinforcement announcement. Thirteen major military communities, each comprising three or more

subcommunities on more than 40 different installations, gave up large numbers if not nearly all of their military members to the deployment.

Fortunately, every married soldier had prepared a Noncombatant Evacuation Operations (NEO) packet containing much of the same information required for the deployment. Powers of attorney, wills, and other critical documents had only to be updated. Military couples and single parents' NEO packets included family support plans that covered arrangements for dependents in such emergencies. Specified guardians, however, were often back in the United States and few soldiers had time to escort family members home. Arranging for those dependents to travel required close cooperation between their guardians and the Army.

With much of VII Corps already scheduled for inactivation, many family members wondered if it would be better to await the return of their loved ones in the US. Should large numbers of dependents disperse to the United States, however, community support would be seriously degraded and the concept of the chain of concern would suffer equally. Encouraged to remain in place, most of the 300,000 family members affected by the deployment chose to do so.

Units remaining in Germany, the deploying units, and their rear detachment chains of command, working with the informal chain of concern network of spouses, ensured adequate care and meticulous and continuous command attention to family support. Locally, many Germans—often German army partnership units—volunteered to assist American family members left behind. In many cases, German commanders attached sergeants to assist American rear detachment commanders in working out problems with the local German community. This unprecedented effort was a source of great comfort to the deploying soldiers as well as to those left behind.

VUONO CREATES A REPLACEMENT SYSTEM

Once the decision to reinforce Desert Shield had been made, General Vuono was faced with the probability that the Army would soon engage in large-scale combat. If combat losses were too great, Vuono's limited pool of trained replacement manpower might not be enough to support his first two vectors. Therefore, he made four key personnel decisions to ensure that a pool of soldiers would be available should casualties decrease the existing pool. His "stop loss" policy essentially canceled routine reassignments, delayed some scheduled retirements for soldiers with critical skills, and postponed discharges. He retained in command for the duration brigade and battalion commanders who had more than three months remaining on their command tours. Commanders within three months could be released if a replacement was available and the incumbent was en route to a critical assignment or career school such as the War College. He also dispatched a number of unassigned lieutenant

colonels and colonels to the theater to be ready to take over battalions, brigades, and other key positions should casualties claim the incumbents.

Vuono would not permit the draining of nondeployed Stateside units. Whenever replacements were absolutely necessary, he insisted that intact crews be sent rather than individual soldiers. The largest slice of available military manpower was the Individual Ready Reserve (IRR) consisting of recently released soldiers who had completed active duty but remained committed to the Reserves. The opportunity to activate the IRR came on January 18 when the President authorized the call-up to active duty for 24 months of a million Reservists. Within the ARSTAF, some trepidation existed about the wisdom of calling back ex-soldiers. Some estimated that fewer than 50 percent would respond to the call, and those who did respond would take a great deal of time and effort to retrain. The IRR's response exceeded even the most optimistic expectations, however. Almost 90 percent of the 20,000 soldiers who received a mailgram notice reported to mobilization stations by February 1, 1991. Soldiers who were expected to need weeks of training were able to revalidate individual and crew proficiency in just a few days. Some IRR Abrams and Bradley crews who had served with units in Germany assembled at stations there and qualified after a single live-fire battle run on the demanding training tables at Grafenwohr. As the air operation progressed, the Army placed more than 13,000 IRRs on active duty in critical combat and support skills. More than half of these soldiers served overseas in Europe or Southwest Asia.

CENTCOM RECEIVES VII CORPS

As Jayhawk units scrambled to deploy from Germany, the ARSTAF tabbed the 1st Infantry Division at Fort Riley, Kansas, to join VII Corps in Saudi Arabia. The deployment came as no surprise to the "Big Red One" commander, Major General Thomas Rhame. He had been exercising the division for some months on breaching operations and desert combat during several rotations at the National Training Center. Rhame was not privy to the Purvis plan, but he involved his division in operations he knew would be required in the future. It was like a theatrical production in which the costumes and scenery were known, the stage was identified, and the cast was selected. All that remained was to complete the script and assign specific roles to the players. Much could be done without knowing the script, and some of what was practiced ahead of time would influence the eventual roles that each player would be assigned.

November was a chaotic month for all concerned. The Purvis group finally scrapped the one-corps plan and turned full attention to the two-corps option. On November 10 they briefed Schwarzkopf on a plan for the initial positioning of VII Corps and subsequent movement of both corps into attack positions west of the Wadi al-Batin. Schwarzkopf's guidance

was to keep everything in place east of the wadi to maintain the deception of an attack into Kuwait for as long as possible. At that point he accepted placing VII Corps immediately west of XVIII Airborne Corps. Depending on XVIII Airborne Corps' eventual mission, they would have to devise a crossover plan to pass the corps around or through VII Corps at the right moment to get both corps into attack positions before launching the ground offensive.

The main thrust of the planning effort during the remainder of November was to bring VII Corps on board in a manner that would facilitate reception, movement to initial assembly areas, and subsequent combat. Naturally, the plan was logistics-intensive. The movement from port to logistics areas would have to be made quickly in spite of limited road space with even more limited transportation. Operationally, General Arnold's expanded planning staff was hard-pressed to sort out the cross-over plan between the two corps as well to assign missions that would take advantage of the unique capabilities of the various Coalition forces.

On November 13, Franks brought his division, corps artillery, armored cavalry regiment, separate brigade, corps support commanders, and primary staff officers to Saudi Arabia for a leaders' reconnaissance. The next day at Dhahran, Schwarzkopf gave an overview of the concept to all US Army commanders down to division level at what may have been the most important meeting of the entire war. As Schwarzkopf defined his concept of the operation in general terms, he specified destruction of the Guard as the objective of the overall campaign, assigned VII Corps the main attack mission, and set mid-January as the time to be ready to execute the Great Wheel.

Planning in VII Corps at the time was focused on getting to the theater, but time was too tight for mistakes. Every decision made in Germany would directly affect the ability of units to form up and fight in the KTO. Commanders on the leaders' reconnaissance made dozens of calls back to Germany to energize the already busy staffs and to redirect attention to specific needs. XVIII Airborne Corps soldiers with extensive experience in the austere Desert Shield environment reminded VII Corps officers time and again to bring everything that might be needed and not to count on getting anything in theater.

SECRECY AND REFINEMENT

Security surrounding the planning process continued to be very tight. The concept was classified "Top Secret, Special Category," one of the highest levels of classification used by the military. General Arnold and the ARCENT planning staff could brief only commanders and a few planners from each division, cavalry regiment, corps artillery, and separate brigade.

Such a level of security created friction with the media. Perhaps at no time since the Inchon Landing during the Korean War had it become so essential to cloak from the enemy such a major operational maneuver. In a region of the world in which secrets are not well preserved, Schwarzkopf faced the very difficult task of moving 255,000 soldiers into attack positions over a three-week period without tipping off Saddam. Had Saddam gotten wind of the movement, he could easily have shifted the Republican Guard southwestward and reoriented them toward VII Corps. Given time, he could also have extended the defensive barrier farther westward across VII Corps' path. The planning group was well aware that either action could cost the lives of thousands of soldiers.

Unlike Inchon, which was planned and prepared under a news blackout in Japan, the Great Wheel was being planned in Riyadh, which was literally crawling with reporters. In Japan, communications had been deliberate enough to ensure that inadvertent slips to the media were intercepted before damage could be done. In the era of instant global communications where raw, unfiltered information is routinely broadcast, any similar leak would have found its way to Baghdad within minutes. The CINC's legitimate concern with operational security greatly limited access to the plan even within his own headquarters. Restrictions on media access to sensitive areas that might jeopardize the plan were even more severe.

November and December were devoted to refinement of the plan. ARCENT approved several major decisions that shaped the positioning of units for the attack. The XVIII Airborne Corps would attack along the line from Rafha to as-Salman to an-Nasiriyah in the Euphrates Valley. Schwarzkopf scotched an earlier idea to go farther to the northwest to as-Samawah. He ordered a shorter envelopment to ensure that the corps would cut off Highway 8 and eliminate any opportunity for the Guard to escape destruction by VII Corps. Schwarzkopf was concerned that a wider envelopment of as-Samawah farther to the west would spread XVIII Airborne Corps too thinly, thereby opening a large gap with VII Corps. Should the Guard turn on Luck's forces by thrusting up Highway 8, VII Corps would be too far to the east to provide timely reinforcement.

Franks was uncomfortable with placing the initial VII Corps tactical assembly areas immediately adjacent to XVIII Airborne Corps. He wanted to move as far west as possible to reduce the distance and number of moves necessary to get to his attack position. Schwarzkopf approved moving the corps west up to the Wadi al-Batin, but no farther.

CENTCOM also needed to decide how to utilize the military capabilities of other Coalition forces. The British 1st Armoured Division had been aligned with the US Marines from the start. The British wanted a more important role in the main attack to make the best use of their capabilities,

so they asked to become part of the VII Corps main effort and in December won Schwarzkopf's approval for attachment. The British division had been aligned originally with the Marines to provide the armored punch necessary to protect the lightly armored and relatively immobile Marines from Iraqi armor. Schwarzkopf replaced them with the "Tiger" Brigade then attached to the 1st Cavalry Division.

Schwarzkopf intended for the Marines and the Arab-Islamic forces to form an anvil against which VII Corps would crush the Guard. He placed the Marines between two Arab forces, each about a corps in strength. The Egyptian corps and a Syrian division were to the left of the Marines, and a smaller formation of Saudis, Moroccans, Qatari, and other units were tucked into an enclave to the east along the coast. By moving farther east, the Marines would also be closer to their sea line of communication.

The French 6th Light Armored Division also needed to be integrated into the plan. Assembled from units from all over France and named "Daquet" in honor of a small, feisty, antlered deer, the French force was roughly equivalent to an armored cavalry regiment. As such, it was ideally suited to a screening and security mission. The French could have gone with either US corps in December, but the decision to place them with XVIII Airborne Corps was based on common sense. Daquet was deployed into the theater and supported from the port of Yanbu on the Red Sea. Pushing them farther west with XVIII Airborne Corps shortened their lines of communication.

Schwarzkopf decided in late November to make the 1st Cavalry Division the theater reserve. He was concerned about a potential Iraqi preemptive attack down the Wadi al-Batin, and he wanted to place the division in a position to defend Hafar al-Batin or KKMC, located just west of the wadi. The Cavalry began movement on December 27, the same day the French were placed under the tactical control of XVIII Airborne Corps and the "Tiger" Brigade went under the operational control of the Marines.

Once they had received Schwarzkopf's November 14 concept briefing, each corps began to develop and analyze new courses of action. Yeosock then received individual brief-backs from each corps commander. Luck, who briefed on November 30, was most concerned about fuel. Precious few tankers were available in the theater, and if XVIII Airborne Corps was expected to attack all the way to the Euphrates, Luck would need many, if not most of them. Fuel tankers were just one commodity that Yeosock and his staff would have to broker between the two corps.

Franks, who briefed Yeosock during a short visit the week before his main headquarters deployed to Dhahran, suggested two variations to the draft concept plan. He wanted either to place XVIII Airborne Corps on his

eastern flank or to pass through XVIII Airborne Corps after it had established a breach. With XVIII Airborne Corps on his right, Franks could swing VII Corps farther to the west without having to worry about an assailable open flank. The second alternative preserved VII Corps combat power by having XVIII Airborne Corps open and secure the breach. Franks reasoned that both options committed the most combat power to smashing the Guard without the need to conduct a time-and-resource-consuming breaching operation. Franks' alternatives were feasible variations of earlier plans that the Purvis group had considered, but again, concern over casualties prevailed. Neither Schwarzkopf nor Yeosock was receptive to the thought of pitting the lighter XVIII Airborne Corps against such a heavily defended zone.

After briefing Yeosock, the corps commanders continued to work on their individual plans. Luck used the BCTP team from Fort Leavenworth, which had helped with defensive plans in October, to war-game several iterations of his plans and train the staff. A larger contingent from BCTP had arrived on November 30 to assist ARCENT in offensive planning. Franks would use them in January but in December could only do a limited amount of war-gaming. Yeosock recognized his need to synchronize the plans of both corps, so he convened a map exercise on December 27 that proved useful in identifying and resolving the ever-increasing logistical challenges.

THE LAND COMPONENT COMMANDER (LCC) ISSUE

Schwarzkopf's span of control could easily become overextended. The two US corps were contending with the US Marines, the French, the British, and the Arab-Islamic forces for many of the same resources. The Coalition had already grown to a multinational, multi-Service force under the shared control of CENTCOM and the Saudi prince, Lieutenant General Khalid bin Sultan. The Saudis had insisted on commanding all Arab forces. Yet the need to maintain unity of command called for establishing a land component commander in charge of all ground forces. Schwarzkopf recognized this dilemma and discussed it at length with his deputy commander, Lieutenant General Calvin Waller. If General Powell was analogous to George C. Marshall during World War II and Schwarzkopf occupied Eisenhower's role as Supreme Allied Commander, Schwarzkopf wondered who should have command of all ground forces.[20] There was no easy answer during World War II and none was forthcoming in November and December 1990 either. Political sensitivities argued against placing Arab forces under an American land commander. Technically, CENTCOM did not control Arab-Islamic forces, and Khalid was Schwarzkopf's political equal.

British and French forces posed fewer problems for integration. Years of NATO exercises and numerous standard agreements dealing with doctrine and training had created a common cultural bias essential for armies to operate together efficiently in the field. All three armies went to extraordinary lengths to create formal bonds through exchange of liaison teams and close association among commanders through personal and unit partnerships. In addition, the US, France, and Britain established strong, instantaneous communications among all major fighting units, in some cases down to regimental level.

Schwarzkopf's practical and philosophical obsession with trading tail for teeth presented another argument against creating a separate LCC. If he approved another headquarters to control both ARCENT and the Marines, and perhaps the Arab forces, he would create another staff layer complete with a four-star general and all the staff accoutrements that go along with it. In retrospect, a few hundred more soldiers might seem insignificant, but at the time resources were stretched so thin that another major headquarters in Saudi Arabia was out of the question.

Schwarzkopf made the tough decision to retain the land component commander responsibility for himself, with Waller serving as his primary assistant for ground combat issues. The decision created numerous challenges and difficulties. Though Yeosock was clearly charged with commanding the two US corps, Schwarzkopf was within his rights as the LCC in going directly to the corps commanders with instructions. From the other direction, the two corps commanders dealt directly with Yeosock. Lieutenant General Charles Horner, as the joint forces air component commander (JFACC), could go directly to the CINC, whereas Yeosock competed with the Arab command and the Marines for Schwarzkopf's attention. This rather convoluted arrangement certainly went against the principles of simplicity and unity of command. That it was made to work as smoothly as it did was attributable to the powerful personalities and professionalism of the senior commanders.

THE PLAN EXPANDS

Consumed initially with the need to clear the ports and move forward into the desert, the VII Corps planning effort for the offensive did not get off the ground until relatively late. Franks had very little time to tie together the complicated wheeling movement his corps was about to execute. It was conceivable, in fact, that some of his subordinate divisions might have just enough time to dock, unload, acclimate, and go into battle. Like any good coach, he recognized the need for a pregame "chalk talk" session to clearly set his intent and to embed the game plan in the players' minds at the earliest possible moment. On New Year's Day, he huddled with his regimental, separate brigade, and division commanders at KKMC, even while most of VII Corps was still loading out in

Germany or was at sea. As the first step in embedding the plan, Franks and his G3, Colonel Stan Cherrie, gave a short briefing. Three days later came the main event when the BCTP staff, recently imported in its entirety from Fort Leavenworth, conducted an elaborate and thorough computer exercise.

The war-gaming facility at KKMC looked at first glance as if a movie crew had mistakenly dumped Star Wars paraphernalia into the middle of a set intended for *The Thief of Baghdad*. KKMC was originally built in 1974 to house a Saudi National Guard brigade. Two magnificent pools, topped by cascading falls and sparkling fountains flowing over beautiful mosaic tiles, formed the centerpiece of the KKMC complex of buildings. On the right, an olympic-sized pool occupied one side of a glassed-in gymnasium. The central building surrounded the fountains in a quadrangle of three- and four-storied glass and concrete offices and barracks. Multicolored, onion-shaped minarets marked the mosque towering over the complex, which soldiers called "Emerald City." With French, British, Saudi, and other soldiers of indeterminate origin wandering about, it had the air of an international bazaar.

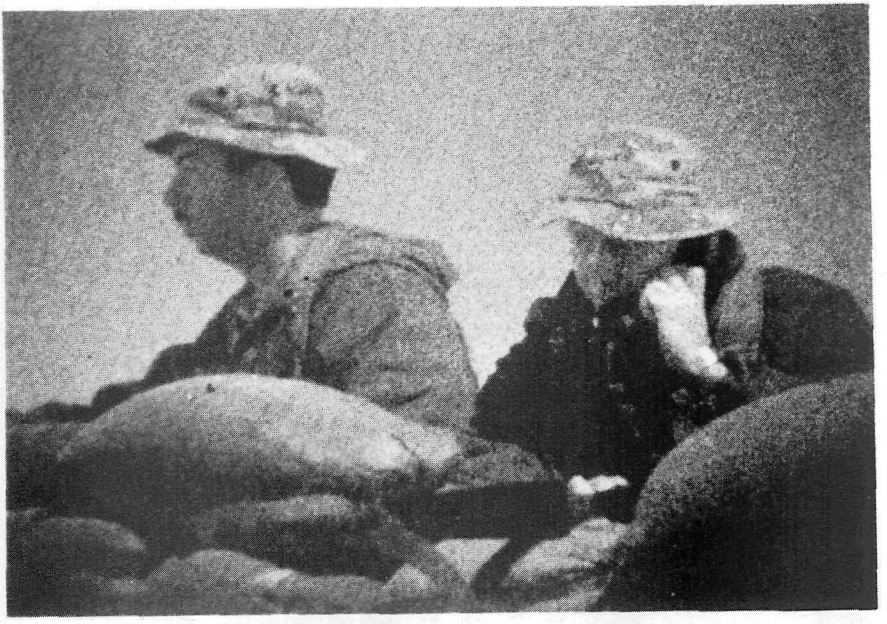
On January 4 Franks and the VII Corps senior leadership gathered around a horseshoe of tables in a huge room in the midst of this incongruous setting. In three days the group would play out each phase of the corps' draft plan. The BCTP threat team carefully constructed a computer model of Iraqi forces the corps would face. The normal BCTP process was streamlined and tailored for the war game. A group of about 20 BCTP operators worked behind dividers, entering corps and division orders directly into the mainframe. As an event or operation developed, these operators passed the computer results to corps leaders. Periodically the corps group would break down into unit huddles to work out any planning wrinkles brought to light during each computer run. Considerable cross talk and coordination with other unit groups during the war game solidified the plan and cut down on later confusion as each commander clarified his actions to his boss and those around him. While the computer simulation in this exercise had some utility, more valuable to Franks was the interchange and team "chatter" among his commanders. In those three days he was able to implant his intent and operational concept firmly in the consciousness of his commanders and staff.

IRAQI DISPOSITIONS IN NOVEMBER

By the end of November, Saddam had deployed 28 divisions to the KTO, representing 60 percent of his available combat power and 40 percent of his divisional strength. Another six infantry divisions entered the KTO as he reactivated reserves or fleshed out understrength infantry brigades, which he pulled off the Iranian border and sent south to thicken forward defenses. As these new infantry units deployed to the KTO, they

plugged gaps in the first line of defense and began to create a second defensive line, notably along high-speed avenues of approach into Kuwait. The Iraqi engineers lived up to their reputation as prodigious builders. As soon as a first defensive belt of wire, trenches, and mines was completed, they began the construction of a second, this time complete with a menacing system of fire trenches filled with crude oil. By November, the Iraqis had arrayed nearly 150 battalions of tube and rocket artillery throughout the KTO. The system of defensive firepower they developed called for the massing of several battalions of artillery into carefully planned box-like concentrations plotted principally around each defensive belt. The object of the artillery plan was to saturate American forces stalled in front of these belts with tons of projectiles.

Command and control of these forces ultimately rested with Iraqi general headquarters in Baghdad. The headquarters forward element was located at Basrah. As always, the high command divided tactical control between the Republican Guard and the regular army. Al-Rawi's Guard divisions served as a theater reserve for the KTO and Saddam's strategic reserve. In addition to the Republican Guard, three regular army heavy divisions also performed the role of theater reserve, albeit through separate command channels. Command of the forward defenses and their operational reserves rested with four corps headquarters.



Special Forces teams patrolled the Kuwait-Iraq border area to provide early warning.

IRAQI DISPOSITIONS—LATE NOVEMBER
IRAN
IRAQ
KUWAIT
SAUDI ARABIA
PERSIAN GULF
AS-SALMAN
BASRAH
SAFWAN
AL-BUSAYYAH
JALIBAH
KUWAIT CITY
WADI AL BATIN
ENLARGED AREA
0 25 50 75 100
KM
APPROXIMATE STRENGTH
451,000 SOLDIERS
3,790 TANKS
2,390 APCs
2,520 ARTILLERY
LEGEND
SPECIAL OPERATIONS FORCES
REPUBLICAN GUARD
OTHER ARMY UNITS
Brigade-Size Units
Division-Size Units
Infantry Units
Mechanized Units
Armor Units

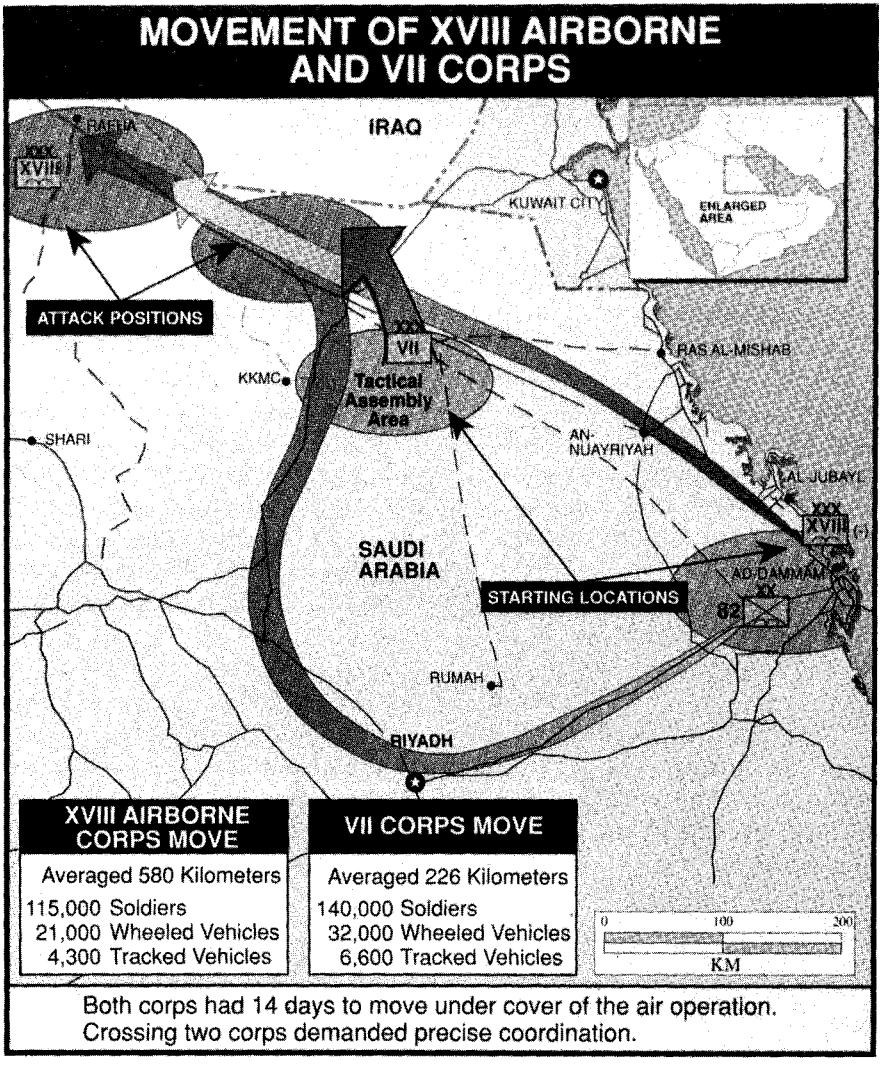
During the Purvis group's planning efforts in September and October, Iraqi defenses west of Kuwait remained relatively stable. Five Iraqi divisions had occupied the western desert opposite the two American corps. Two infantry divisions—one in place since mid-August—were tied into the Iraqi frontal defenses in Kuwait across the Wadi al-Batin. A 45-kilometer gap existed between these two divisions and the 26th Infantry Division, the next major combat formation arrayed westward along the border. The gap was covered to some extent by two second-echelon heavy divisions, the 52d Armored Division and the Republican Guard's Tawakalna Mechanized Division. These formations were centered some 65 kilometers behind the forward infantry division and were positioned to strike any Coalition force that sought to exploit the 45-kilometer gap by attacking up the Wadi al-Batin toward Basrah. The Iraqis had used this armored ambush technique against the Iranians. The objective was simply to lure a large armored formation far enough up the wadi that it could not withdraw and then destroy it by a mobile flank attack from two directions. Some 20 battalions of artillery out of the 150 in theater were available to support these units. By November and December the picture had not changed significantly, and it was expected to stay about the same through January.

SCHWARZKOPF'S SYMPHONY

Schwarzkopf anticipated that two weeks would be needed to execute the Great Wheel. The air operation was planned for about the same amount of time but could be continued or shortened depending on weather and the ability of the Air Force to destroy Iraqi equipment.

In order to maintain the deception, the two corps would not begin to move into final attack positions west of Wadi al-Batin until air power had blinded Saddam. The crossover of the two corps would have to be completed entirely during the air operation, not before. Franks and Luck would have just two weeks to conduct one of the most complex movements of major ground forces in history. More than 64,000 wheeled and tracked vehicles and 255,000 soldiers from the two corps would have to be shifted laterally as much as 300 miles. Concurrently, the 22d Support Command would have to construct and stock two enormous logistics bases with 60 days' supplies to support each corps.

During the weeks of the air operation, some details of the plan would change, but the essential concept was solid enough to remain intact. The ground offensive would commence on Schwarzkopf's orders with the two supporting attacks on the flanks of VII Corps' main attack. On the right of VII Corps, the Arab forces and the Marines would begin with artillery and naval gunfire preparations, while the 4th Marine Expeditionary Brigade feinted an amphibious landing off the Kuwaiti coast. To the west of VII Corps, XVIII Airborne Corps would commence their attack at



Both corps had 14 days to move under cover of the air operation. Crossing two corps demanded precise coordination.

the same time as the Coalition forces and Marines, with simultaneous ground and air assault thrusts. These two attacks would continue for 24 hours before VII Corps began the main attack.

Schwarzkopf wanted to do two things with the supporting attacks as preconditions for the success of the main effort. First, Arab and Marine attacks into Kuwait and the amphibious feint would reinforce the deception plan and keep the Iraqis focused to the south and east. Second, the distraction caused by the Arab and Marine thrust would give XVIII Airborne Corps time to push largely unopposed into Iraq to close off any chance that the Republican Guard might escape. The plan for the main

attack called for five armored divisions to form a spoke of the Great Wheel. If these divisions were to maintain alignment along the spoke, those near the hub would have to advance relatively slowly while those near the rim would have to charge very far, very fast. Alignment was important to avoid piecemeal engagement once contact with the Republican Guard was made. If the rotation went according to plan, all five divisions would turn shoulder to shoulder and slam into the Guard simultaneously in a collision of unprecedented violence and shock effect. Audacious, ambitious, and complex, the Great Wheel would be ready to start turning by mid-February.

ARCENT used the time remaining before Desert Storm to continue planning, to build up logistics bases, and to train for anticipated operations. Once the air attacks began, all of the planners who had had a hand in the eventual campaign plan would be able to see their efforts put into practice. Purvis and his group were returned to the CENTCOM chief of staff's control on January 27, 1991. Their main mission while the air operation continued was to assist Schwarzkopf in his decisions for each 72-hour cycle.

CONTINGENCY PLANS BECOME "AUDIBLES"

Once the big picture was approved, the ARCENT planners were left with two essential missions. The first was to impress the CINC's vision for the Great Wheel firmly in the psyche of those who were to execute it so that they, in turn, could refine the broad concept into simple orders. The second was to work closely with both corps planning staffs to develop a series of contingency plans. Contingency planning is based on the premise that no operation will develop exactly as intended. Unforeseen impediments, which Clauswitz termed "the frictions of war," invariably deflect a plan from its intended course. To accommodate the unexpected, the planners identified four critical stages or decision points when changes in the Great Wheel's direction, speed, mission, and committed forces might be needed. The first could come immediately after the breach when commanders would assess damage, make necessary adjustments to the time schedule, and turn against the operational reserve with ground and air attacks. The second, and most critical, would occur at Phase Line Smash where Franks would form his armored fist and swing it toward the Republican Guard. The third was when, after smashing through the Guard, Franks would redirect the corps against the remaining Iraqi units and, if possible, block their withdrawal into Iraq. The fourth and last would place the force in the optimum position to end the conflict on the most favorable terms.

The contingency plans were essentially option plays or "audibles" that corps commanders would call on the move to accommodate the enemy's reactions. Thus, precise intelligence on enemy movements was absolutely

vital to making the right call. CENTCOM and ARCENT intelligence would have to watch all enemy armored reserves much as a football coaching staff high in the stadium might observe a defensive team lineup for each play. Armed with these "key intelligence reads," the quarterbacks would be able to call exactly the right audible to capitalize on successes or to exploit weaknesses in the enemy's defensive formation. All planning staffs developed elaborate decision matrices to assist in determining the right audible. Subordinate units studied their portions of the plans and ran practice sessions on makeshift sand tables to set the game plan more firmly in all of the players' minds. Each of the corps commanders expressed distinct concepts in his operational plans.

XVIII AIRBORNE COMMANDER'S CONCEPT

General Luck intended to strike with helicopter-borne air assault forces from the 101st deep into the Euphrates River Valley, then follow with heavy armor to sever Highway 8 nearly 200 kilometers deep into Iraq. The corps faced relatively weak forces consisting primarily of infantry units scattered over hundreds of miles of open desert. Luck would accept risk with a bold thrust of the 101st northward to grasp Highway 8 as quickly as possible. Once astride the highway, the division would have to hold on long enough for the 24th Division to link up and completely shut off any possibility of escape. [21]

Each of Luck's divisions had its own separate mission and independent axis of attack. The French 6th Light Armored Division, reinforced with a brigade of the 82d Airborne, was the corps' initial main effort. The 6th would launch a lightning-fast attack up the hard-surfaced road that ran from the border to the town of as-Salman. After securing the town and a nearby fighter base, the French would screen to the west while the rest of the corps advanced. The 101st was to launch the largest air assault attack in history deep into Iraq to get astride Highway 8. The 24th Infantry Division would follow the 101st on the ground, with the 3d ACR on their right screening the boundary with VII Corps, and would become the corps' main effort when it broke into the Euphrates River Valley. With the bulk of his combat forces blocking Highway 8, Luck could then turn the 24th eastward and move along the highway to join VII Corps in the destruction of the Republican Guard. After nearly six months in the desert, Luck felt confident that XVIII Airborne Corps, joined by the 212th Field Artillery Brigade in November, was ready to accomplish its mission. His Active and Reserve combat support and combat service support units brought the corps' total strength on the eve of the war to 117,844 soldiers, 28,000 vehicles, and 980 aircraft.

VII CORPS COMMANDER'S CONCEPT

Franks' plan was for the 1st Infantry Division to conduct the breach of Iraqi defenses in a deliberate, carefully rehearsed, and heavily supported attack. Originally, the entire corps was supposed to pass through the lanes opened by the "Big Red One," but by the start of air operations the Iraqis had failed to extend their defenses to the west, leaving that area relatively undefended. Franks, in a move that showed great adaptability, flexibility, and confidence in his subordinate leaders, decided to modify the plan by slipping the 2d ACR and the 1st and 3d Armored Divisions around the west of the breach. He kept the brunt of his initial attack on his right with the 1st Infantry Division's breach against the Iraqi 26th and 48th Infantry Divisions. Once the breach was complete, the British 1st Armoured Division would thrust through the opening and turn sharply east to destroy the waiting second-echelon forces and spoil any Iraqi plan to spring a two-division armored ambush against the right flank of VII Corps.

The movement of the two US armored divisions forward into the battle area would be controlled, deliberate, and cloaked from enemy view by the advance of the 2d ACR. While the breach and the move on the west were independent actions, the attack on the Republican Guard depended on the success of both operations. The breach was necessary to provide a secure conduit for the heavy logistical forces required to support the advance of the corps. If the Iraqis were able to oppose and delay the advance on the west of the breach, the whole main attack could be jeopardized. Momentum was key. Once the breach site was secure, Franks would form his corps into a tightly clenched fist to shatter the Guard in a massive blow. More than any single factor, the momentum of the armored advance depended on logistics. An armored corps in the attack has a voracious appetite for fuel and ammunition. Franks insisted on no operational pauses until the Republican Guard was destroyed. Any operational pause would take away this key timing edge and allow the Guard to set its defenses. A stable, unbroken enemy would only cause more delay and more casualties. VII Corps units could halt briefly to realign themselves or refuel on the move, but the momentum of the corps would continue unrelentingly until soldiers, supplies, and fuel were exhausted.

Despite the Iraqi border units' continued poor performance in early skirmishes, uncertainty remained. Franks went everywhere in the corps, seeing commanders, checking signals, and talking to soldiers. Franks had one of the most powerful corps the American Army had ever fielded. With three modern armored divisions—the 1st, the 3d, and the British 1st; the 1st Infantry Division (Mech); the 2d ACR; the 11th Aviation Brigade; the 42d, 142d, 75th, and 210th Field Artillery Brigades; the 7th Engineer Brigade; and a host of Active and Reserve component combat support and combat service support units, the corps boasted almost 145,000 men, more than 45,000 vehicles, and more than 600 aircraft.

THE THEATER RESERVE

To counter a possible Iraqi preemptive attack through Hafar al-Batin toward Riyadh, the 1st Cavalry Division had been placed west of the Wadi al-Batin on the ARCENT boundary with the JFC-North. While technically under Schwarzkopf's direct control, Tilelli's division also performed a vital task for VII Corps in persuading the Iraqi high command that American armored forces would indeed attack up the Wadi al-Batin. Once ARCENT did attack, the 1st Cavalry Division would fix the attention of the enemy by striking defensive positions along the wadi with Apaches and artillery and conducting a feint with a one-brigade ground attack.[22] These actions were scheduled to continue until the division was released from its theater reserve role. Although both US corps commanders wanted the 1st Cavalry released to their control at the first opportunity, Schwarzkopf intended to delay that decision to the last possible minute in order to reinforce the Egyptians if necessary and to keep his options open for as long as possible.

TRAINING AND REHEARSALS

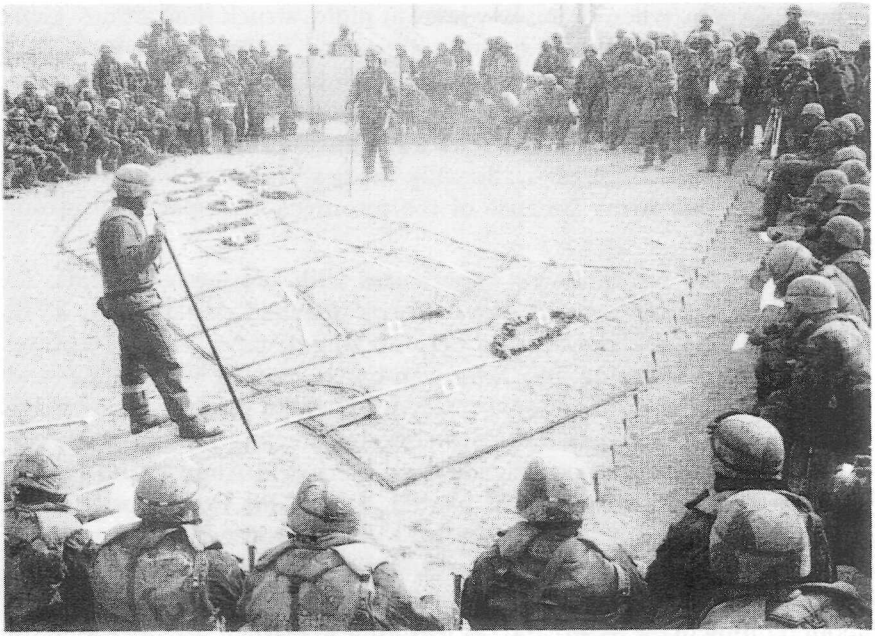
Unlike previous wars, the soldiers dispatched to Saudi Arabia arrived in theater thoroughly trained. Instead of green crews only recently introduced to their equipment, most tankers, Bradley crewmen, pilots, and artillerymen had developed an almost instinctual familiarity with modern, high-tech war machinery that could only have been accrued through years of constant training. While personnel turbulence remained a problem in some units, most crewmen had worked and lived together for a considerable time and had bonded well in the tough training environments of the National Training Center and live-fire ranges in Germany, Fort Hood, Texas, and elsewhere. Once on the ground in Saudi Arabia, time, space, and ammunition were available in varying degrees to hone combat skills to an even sharper edge. Units trained most intently on nuclear, biological, and chemical (NBC) individual protective measures and re-zeroed individual and crew-served weapons. Commanders conducted classes on a wide array of topics such as the Iraqi army, Arab customs and culture, and standards of acceptable conduct in Saudi Arabia. Some Iraqi equipment was available and leaders and soldiers studied it firsthand. Acclimatization was particularly important to XVIII Airborne Corps soldiers who arrived in brutal August heat. Learning that the desert environment could be unforgiving, soldiers were instructed in forced drinking of water and gradual physical toughening through exercises and road marches. Pilots discovered that night flying in the desert was extremely difficult. It was all too easy for even the most experienced aviator to lose all sensation of height when flying close to the ground, particularly using night vision goggles in flat, featureless desert terrain. A few unwary pilots, unable to accurately judge their altitude, flew into the

ground. Others, when flying low level at night, struck sand dunes. General Luck soon established training areas and firing ranges to further exercise and prepare his corps for combat. Until November, Luck's training guidance emphasized the defense, concentrating on moving long distances, navigating, and coordinating maneuver up through division level. Luck described it as "... actually the best training we've probably ever had in this Army because of the resources and space put at our disposal."[23]

Luck shared his hard-won experiences with later-arriving units. As soon as notification arrived of VII Corps' planned deployment, XVIII Airborne Corps soldiers began a helpful, long-distance, lessons-learned dialogue with Stateside and European-based units. The ARSTAF and TRADOC published handbooks and pamphlets to pass this knowledge through official channels. VII Corps began collecting lessons when elements of its 11th Aviation Brigade were alerted in August, and Franks continued when VII Corps was alerted. One of his first stops in early November was Luck's headquarters. XVIII Airborne Corps agreed to "sponsor" VII Corps to save time getting the European-based corps on its feet in the desert. After 40 years in Bavaria, VII Corps had the most to learn about fighting in the desert and the least time to learn it. The huge amount of new equipment thrust on them once in theater compounded the training problem. Such items as the Global Positioning System, unmanned aerial vehicles, mine plows, and mine rakes all required a period of familiarization and subsequent crash courses on maintenance and employment. As ammunition became available, VII Corps began live firing of individual and crew-served weapons such as the AT-4 antitank missile, new to many soldiers in the corps. Apache attack helicopter crews discovered ways to avoid losing control of the Hellfire caused by laser backscatter from the fine sand suspended in the air. Overall, corps units fired every major weapon from the Abrams to the MLRS.

Both corps constructed elaborate models of Iraqi defenses. XVIII Airborne Corps dug a complete triangular Iraqi battalion battle position and used it to run a series of exhaustive rehearsals and battle drills by all units expecting to participate in the breach or to assault prepared positions during the advance. The 1st Infantry Division continued the excellent training in breaching operations it had begun at Fort Riley and the NTC. Using aerial photographs and templates as a guide, they constructed a 5-kilometer-wide replica of the forward Iraqi trench system complete with fighting positions, command and control bunkers, and mortar, tank, and artillery revetments. Units started training in the ports and carried it over into the movement to the assembly areas where they expanded from individual vehicles and aircraft to multi-unit operations.

VII Corps conducted a grand dress rehearsal. General Franks intended to exploit the opportunity offered by the westward shift of his corps into



The operation was rehearsed down to the lowest levels. Above, the 1st Infantry Division conducted a sand-table exercise just before beginning the breaching operation. Below, 24th Infantry soldiers practiced dismounting from a Bradley.

attack positions. He would use the 250-kilometer move to rehearse his own Great Wheel maneuver, including the formation of the armored fist he intended to thrust at the Republican Guard. His staff was not too sure the idea was a good one. Without other distractions, the movement west threatened to be a very confusing affair. The corps would have to cross the rear of XVIII Airborne Corps and two of Franks' divisions would in turn cross each other's paths. At any one time at least 30,000 vehicles would be moving, often in converging directions, across four or five roads. The rehearsal would add to this confusion by requiring both the 2d ACR and the 1st Armored Division to cross Tapline Road twice—once to get to the staging areas and again in the rehearsal movement north. Nevertheless, Franks believed strongly that the benefits of this dress rehearsal far outweighed the risks.

Franks first moved Colonel Don Holder's 2d ACR to staging areas north of KKMC. On February 14 Major General Ron Griffith's 1st Armored Division moved from its position northeast of Hafar al-Batin south across the Tapline Road to a staging area south of the 2d ACR. Shortly thereafter, Major General Paul Funk's 3d Armored Division crossed MSR Sultan, the highway between KKMC and Hafar al-Batin, from its tactical assembly area south of Tapline Road and took up a position just west of the 1st Armored Division. The three combat units were now lined up in a stance ready to conduct the rehearsal on February 16 and 17. While the moves into the staging area were in progress on the 14th, the Iraqis hit Hafar al-Batin with a Scud missile, an ineffectual attack that nevertheless raised the tension level in the corps considerably.

Once the three units were in place, the plan was for the massive formation to approach and cross Tapline Road from the south using the road to represent the berm along the Iraqi-Saudi border. The 2d ACR would identify the crossing sites and coordinate with the military police to stop traffic for the move. The regiment would continue north in battle formation, practicing movement-to-contact and drills along the way. Both divisions would follow the cavalry across the road in their own combat formations led by divisional cavalry squadrons.

The rehearsal started early on February 16 and was completed by February 18. Only combat itself could have been more impressive. The lessons learned from corps to squad were used to refine techniques and the overall movement plan. In just six short days VII Corps would repeat the same maneuver against the Iraqis.

Prior to Desert Storm, no American Army had ever planned, prepared, rehearsed, or trained so thoroughly for a first campaign. In prior conflicts, the pressing need to get on with the war, coupled with an inexact picture of the enemy and poorly prepared soldiers, meant that first battles proved to be bloody schools in which green staffs and units were obliged to refine

their skills on the battlefield. In Desert Storm the Purvis group, along with hundreds of similar staffs, had enough time to think through the campaign carefully and to devise and revise a method of attack that best suited the time-honored factors of METT-T. In addition, the campaign planners possessed a doctrine, AirLand Battle, that proved remarkably suitable to the unique circumstances of the theater. Commanders at all levels were determined to leave nothing to chance. Young soldiers could pay no higher compliment to those who planned and prepared the campaign than to profess, as most of them did, that the sweat and energy expended in preparation made the real thing seem almost anticlimactic.

Notes

1. Force Muthannah, under a Saudi commander, consisted of the Royal Saudi Land Forces 20th Mechanized Brigade and the Kuwaiti 35th Armored Brigade .

2. Schubert and Kraus, p. 174.

3. Army Chief of Staff George C. Marshall in 1941 address to OCS graduates, as quoted in Paul F. Gorman's *The Secret of Future Victories* (Alexandria, VA: Institute for Defense Analyses, October 1991), p. 45.

4. Vuono interview.

5. Schubert and Kraus, p. 174.

6. Swain, pp. 99-100.

7. Colonel Joe Purvis, interview and manuscript review, June 10, 1992.

8. *Ibid.*

9. General H. Norman Schwarzkopf with Peter Petre. *It Doesn't Take a Hero* (New York: Bantam Books, October 1992), p. 354.

10. Slide entitled "Strategic Objectives" from Purvis briefing on Course-of-Action Development, undated.

11. Army FM 31-20, *Doctrine for Special Forces Operations*, April 1, 1990, p. 3-1.

12. Slide entitled "Mission" from Purvis briefing.

13. Interview with Lieutenant General Gary Luck, February 21, 1992.

14. Phone conversation with Colonel James T. Hill, commander, 1st Brigade, 101st Airborne Division (Air Assault), May 12, 1992.

15. Purvis Diary.

16. Purvis review of draft chapter manuscript, June 10, 1992.

17. Swain, p. 114.

18. *US Army Central Command Military Intelligence History*, Colonel Donald Kerrick, committee chairman, approximate date April 1991, pp. 68-72, hereafter referred to as *ARCENT MI History*.

19. Provided by Lieutenant Colonel Terry Johnson, then deputy commander, VII Corps 11th Aviation Brigade, November 1991.

20. Brigadier General Timothy Grogan's interview with Lieutenant General Calvin Waller, May 1991.

21. XVIII Airborne Corps OPLAN Desert Storm, January 13, 1991, p. 4.

22. VII Corps After-Action Command Report, Operation Desert Storm, Vol 15, Part 1A, "The Executive Summary," and Part 1B, a narrative summary that describes, by phase, 1st Cavalry Division operations.

23. Luck interview.